COTTON

Volume 83
Number Eleven
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SEPTEMBER, 1919

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REWIND

YOUR FILLING

IT PAYS

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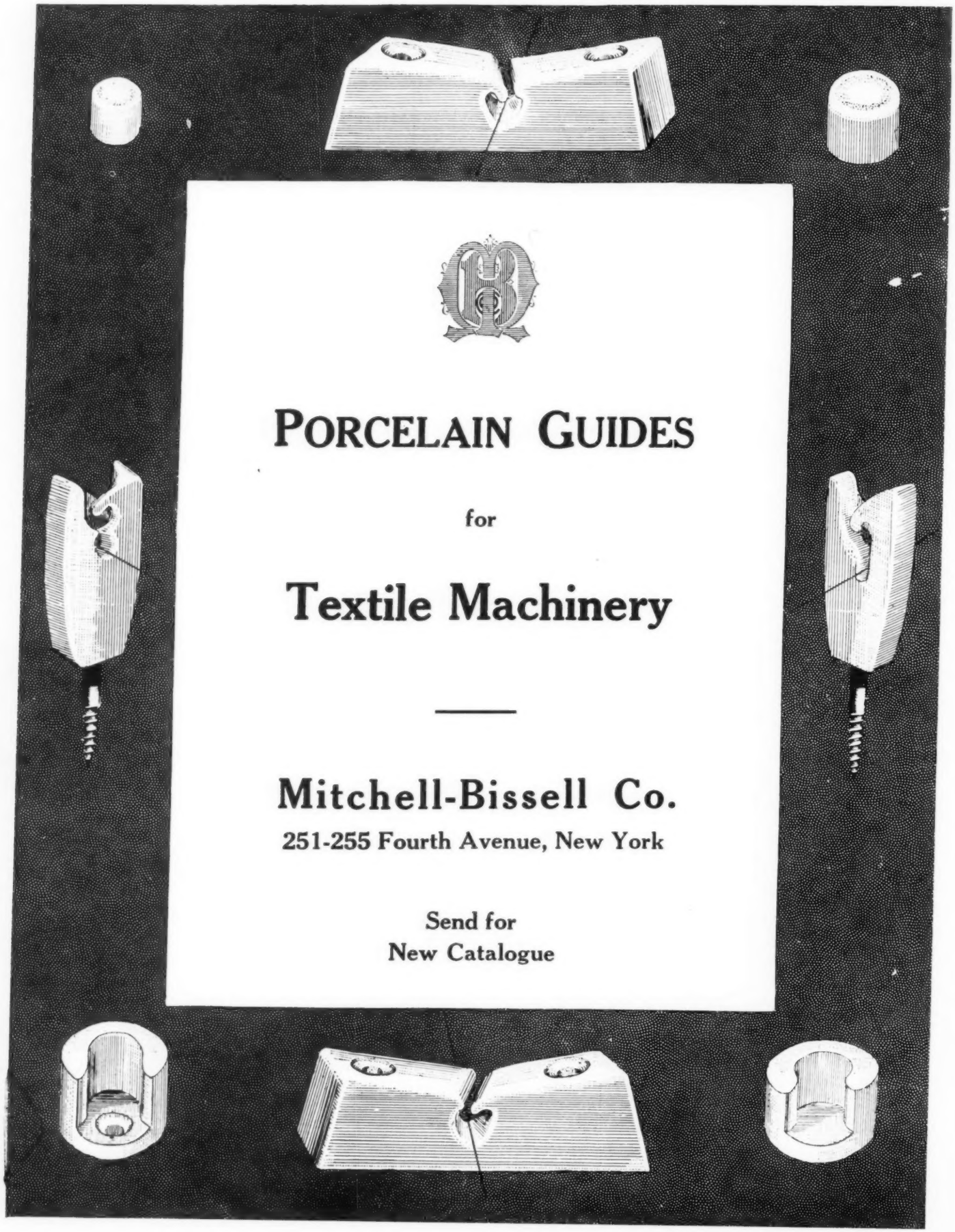
PORCELAIN GUIDES
for
Textile Machinery
Mitchell-Bissell Co.
251-255 Fourth Avenue, New York
Send for
New Catalogue

MIRROR DROP WIRES

TRADE-MARK REG. U. S. PAT. OFF.

Having greatly improved the finish of our Northrop Loom Drop Wires we have adopted the trade-mark

MIRROR

to identify the drop wires of our manufacture and each shipment will contain a slip bearing this trade-mark

We request our Northrop Loom Customers to look for this name which will guarantee the high quality of the drop wires

DRAPER CORPORATION
HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

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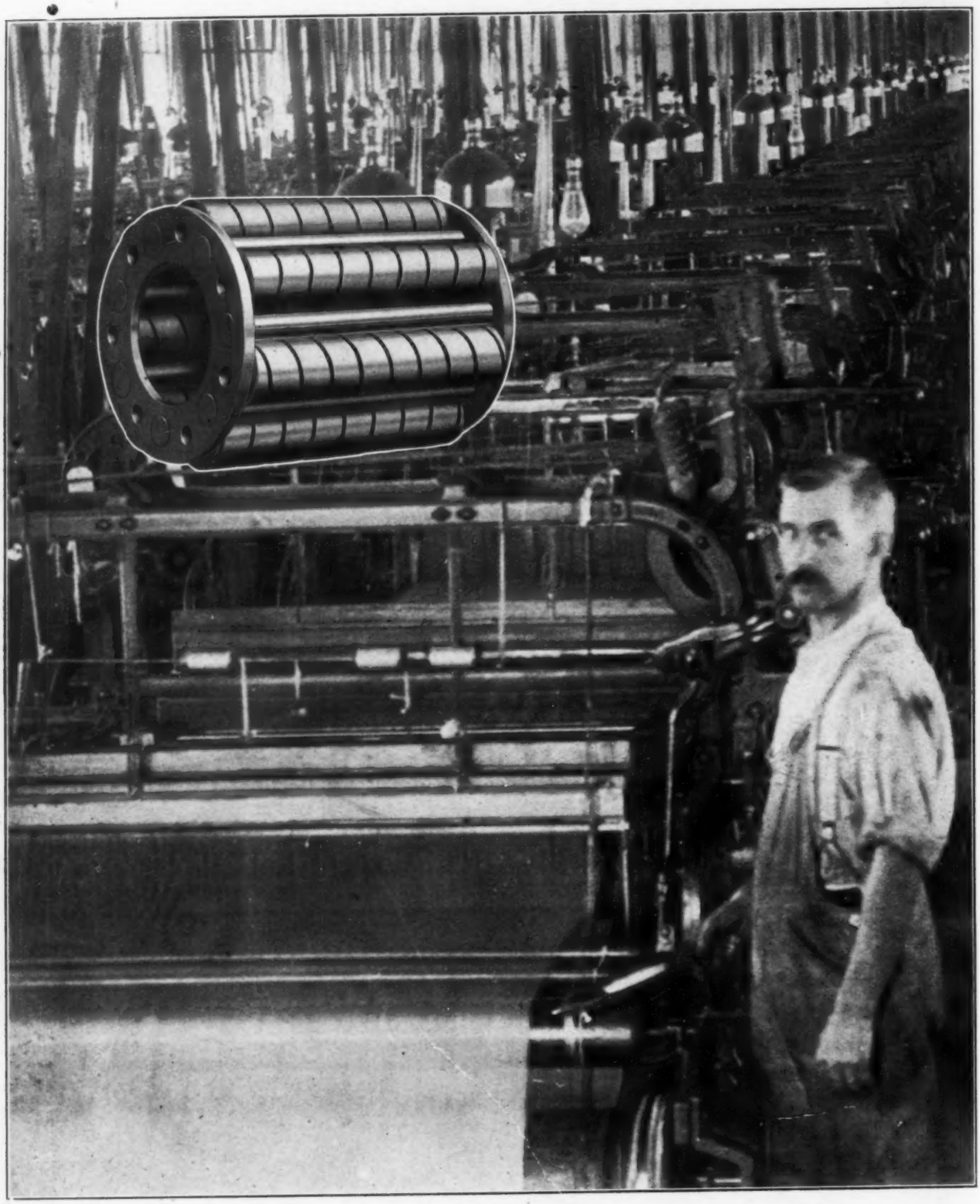
Why 4 Hyatt Bearing Looms



Hyatt Bearings For Looms

Equal 5 Plain Bearing Looms

The Stewart Silk Company, Easton, Pa., has obtained results from looms equipped with Hyatt Roller Bearings which will interest all progressive mill owners.

Increased Production—By the use of Hyatt Roller Bearings their looms were speeded up from 160 picks per minute to 202 picks. From 31 yards a day, the output of a plain bearing loom, production has jumped to 38 or 40 yards a day. In other words—

FOUR Hyatt equipped looms have the same output as FIVE plain bearing looms

IMPROVED FABRIC—The smooth easy running qualities of Hyatt Roller Bearings have greatly reduced thread breakage, thus improving the quality of the finished product.

EASY TO OPERATE—The Hyatt equipped looms can be easily turned over by hand, greatly facilitating the work of the weaver.

ECONOMICAL—The use of Hyatt equipped looms also results in a DIRECT saving in dollars and cents. Reduced friction—reduced power costs. Hyatt equipped looms need only be oiled four or five times a year—reduced lubrication costs. The bearings give years of service without appreciable wear—reduced maintenance costs.

For Increased Production with Decreased Costs—specify Hyatt Roller Bearing equipped looms.

HYATT ROLLER BEARING COMPANY
INDUSTRIAL BEARINGS DIVISION
METROPOLITAN TOWER, NEW YORK

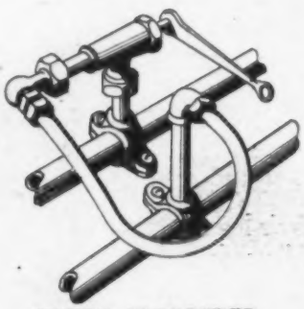
MOTOR BEARINGS DIVISION
DETROIT

TRACTOR BEARINGS DIVISION
CHICAGO, ILLS.

Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Line Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery Locomotives, etc.

Hyatt Bearings For Looms

DO YOU WANT TO GET THE MOST OUT OF HUMIDIFIERS?

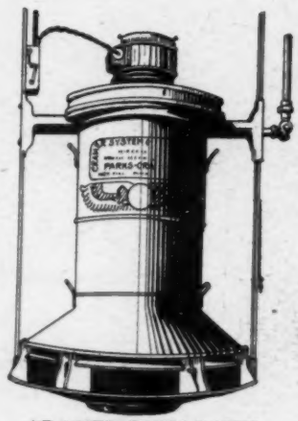


TURBO HUMIDIFIER

The benefits to be secured from humidifiers come from the application of the right sort of devices to the particular problem.

Turbo Humidifiers are particularly advantageous in low posted rooms.

Cramer high duty humidifiers give the most in evaporative capacity for the money.



CRAMER HIGH DUTY HUMIDIFIER

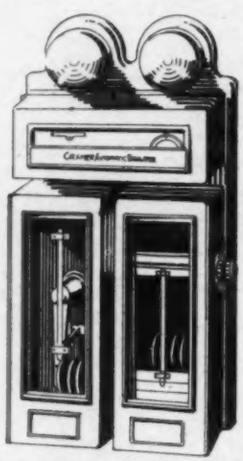
Do you want to keep your yarn counts —and cloth weights uniform?

Install ample humidifier capacity.

Want ample capacity? Want to know whether you have it or not?

There is a scientific way of finding out. Ask us how.

Would it be advantageous to you to prevent fluctuations in regain?—to reduce seconds — to eliminate waste?



CRAMER AUTOMATIC REGULATOR

Equip with automatic humidity control—for regulation by "feel," or by whim is inaccurate, and likely to be expensive.

Figures that we can show you—yes, the mills in most cases were, or thought they were, humidified—are startling.

Parks-Cramer Company

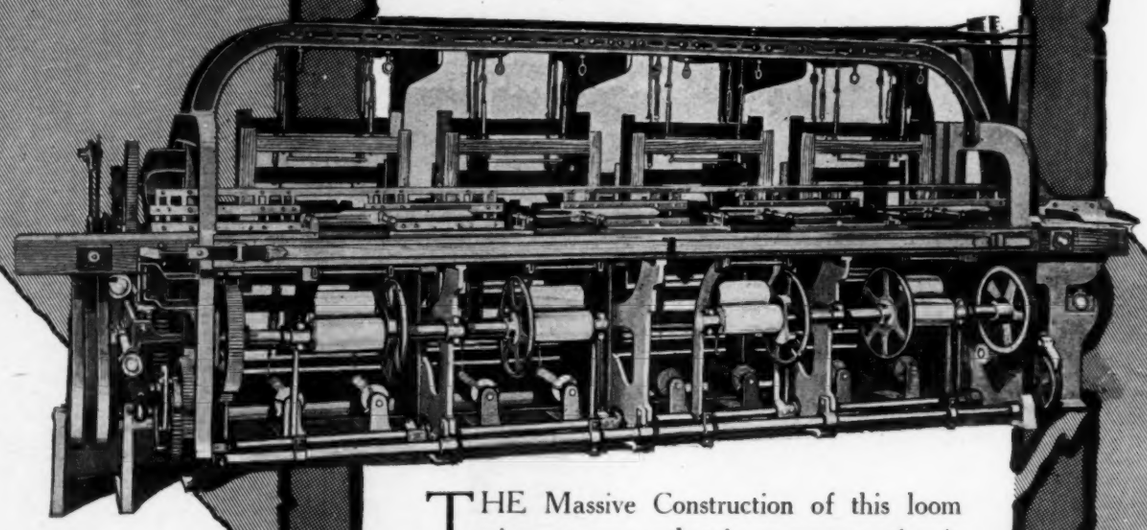
Successors to

The G. M. Parks Company Stuart W. Cramer

FITCHBURG, MASS. CHARLOTTE, N. C. BOSTON, MASS.

FLETCHER WORKS

Formerly
Schaum & Uhlinger



COTTON BELTING LOOM

THE Massive Construction of this loom gives assurance that in every operation it possesses the ruggedness necessary to weave belting and heavy webbing in 2, 3 and 4 ply weaves.

Arranged for either belt or motor drive.

This loom will make:

4 pieces of 8 in. web.
6 pieces of 4¾ in. web.
8 pieces of 3 in. web.
10 pieces of 2¼ in. web.
12 pieces of 1½ in. web.

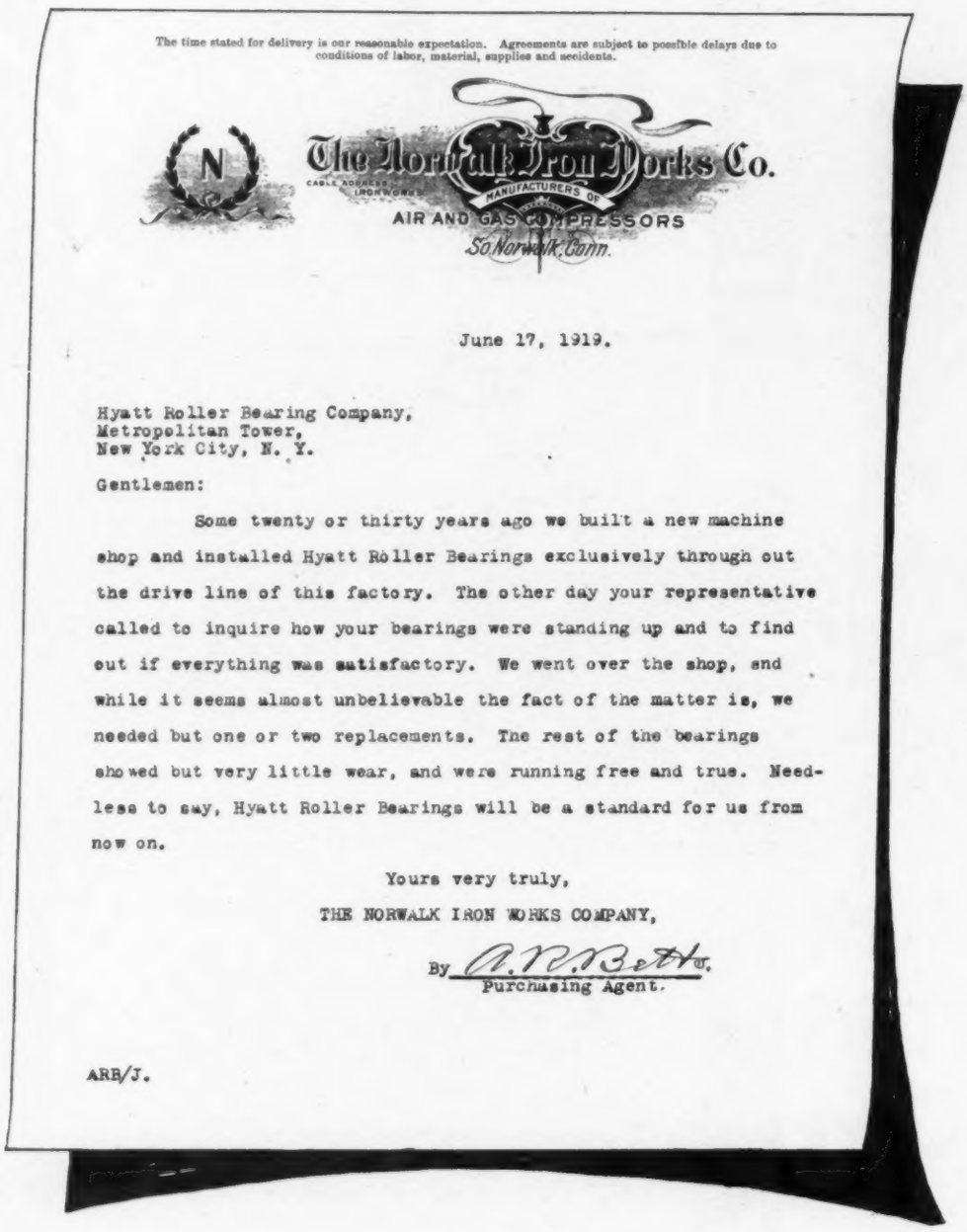
If you will send samples of belt you desire to make our engineering department will be pleased to advise you about the right loom to use.

Write for catalog or other information about Fletcher Works looms.

FLETCHER WORKS

Glenwood Ave. & 2nd Street
Philadelphia, U. S. A.

A QUARTER OF A CENTURY



The time stated for delivery is our reasonable expectation. Agreements are subject to possible delays due to conditions of labor, material, supplies and accidents.

The Norwalk Iron Works Co.
CABLE ADDRESS NORWALK IRONWORKS
MANUFACTURERS OF
AIR AND GAS COMPRESSORS
So. Norwalk, Conn.

June 17, 1919.

Hyatt Roller Bearing Company,
Metropolitan Tower,
New York City, N. Y.

Gentlemen:

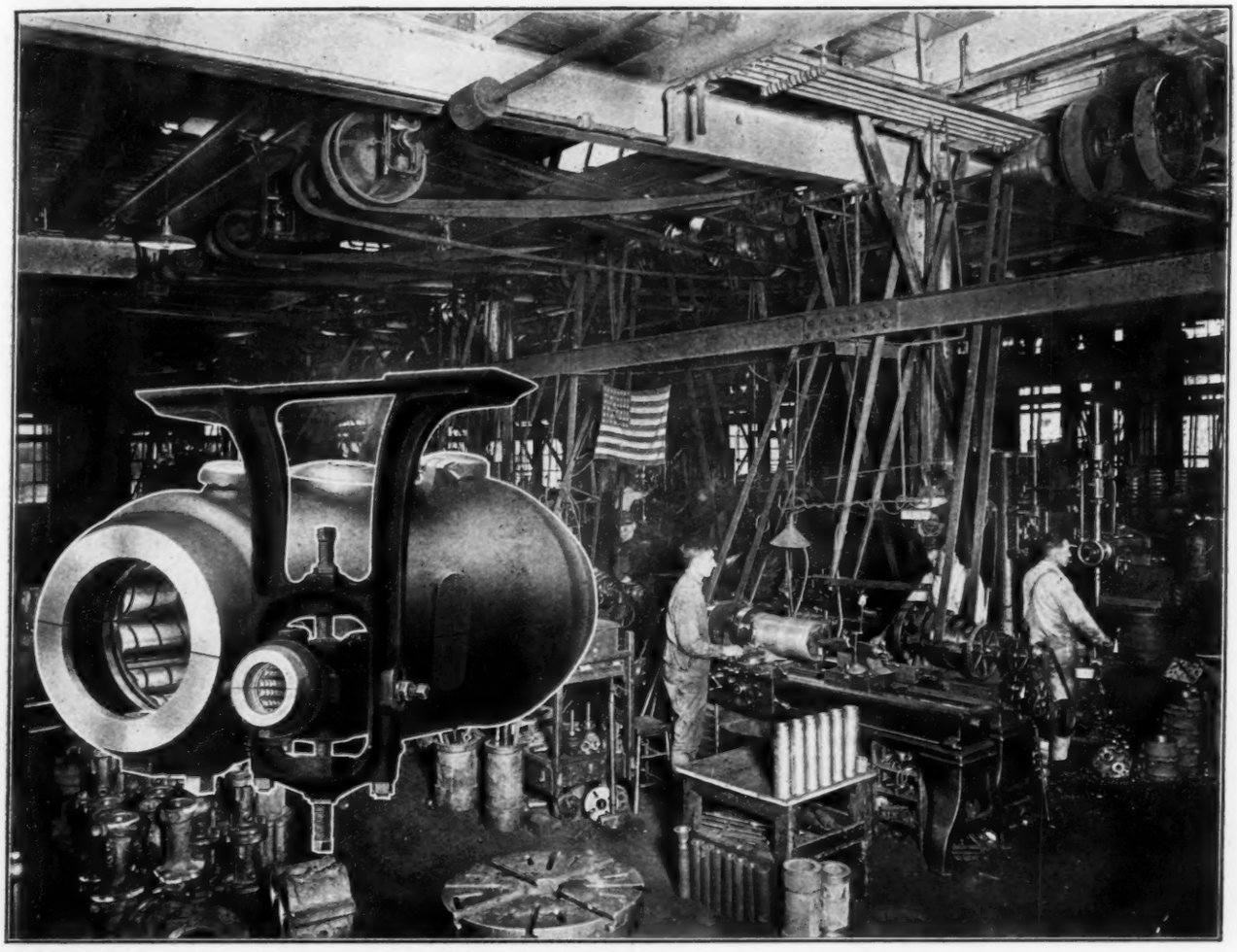
Some twenty or thirty years ago we built a new machine shop and installed Hyatt Roller Bearings exclusively through out the drive line of this factory. The other day your representative called to inquire how your bearings were standing up and to find out if everything was satisfactory. We went over the shop, and while it seems almost unbelievable the fact of the matter is, we needed but one or two replacements. The rest of the bearings showed but very little wear, and were running free and true. Needless to say, Hyatt Roller Bearings will be a standard for us from now on.

Yours very truly,
THE NORWALK IRON WORKS COMPANY,
By A. R. Bell
Purchasing Agent.

ARB/J.

HYATT BEARINGS

AND STILL ON THE JOB



The durability and dependability of Hyatt Roller Bearing Hangers are well shown by the years of satisfactory service they have given at the Norwalk Iron Works.

The power saving and positive oiling features of this Standardized Transmission Equipment are perhaps even more important in reducing transmission costs than their durability.

Our transmission bulletin will be of interest and value to you. Send for it today.

B-128

MOTOR BEARINGS DIVISION
DETROIT, MICHIGAN

HYATT ROLLER BEARING COMPANY
INDUSTRIAL BEARINGS DIVISION
METROPOLITAN TOWER, NEW YORK

TRACTOR BEARINGS DIVISION
CHICAGO, ILLINOIS

Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Line Shafts, Countershaftr, Concrete Machinery, Textile Machinery. Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery Locomotives, etc.

FOR LINE SHAFTS

SACO-LOWELL CARD STRIPPER

DUSTLESS AND AUTOMATIC

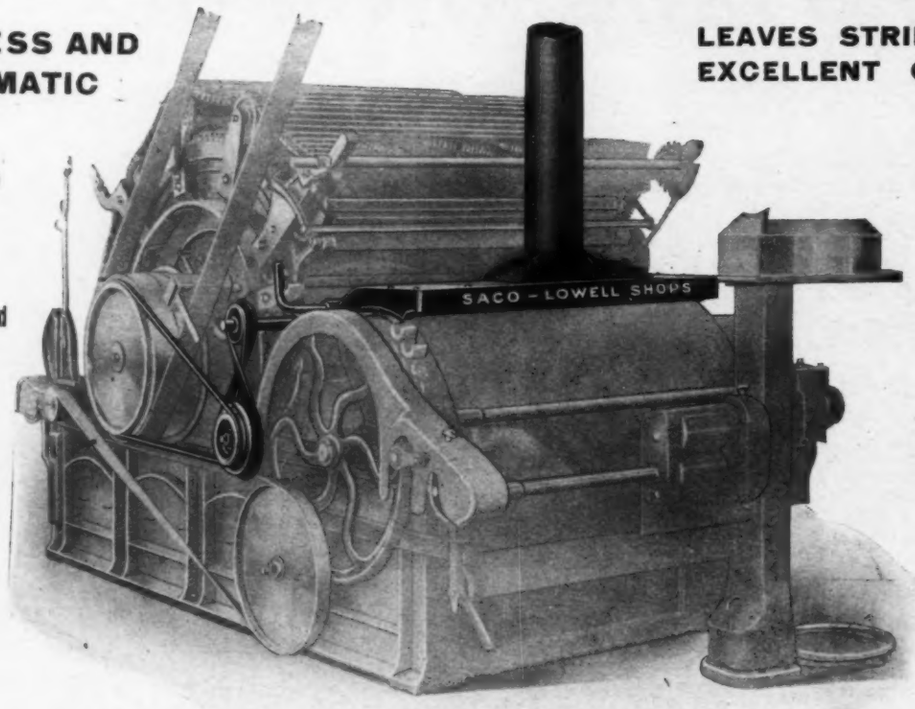
LEAVES STRIPPINGS IN EXCELLENT CONDITION

Ecomomical to Operate

Saves Time and Labor

Strips Card Clean

Sanitary and Efficient



Low Cost of Maintenance

Simple, Durable Practical

Control Always Absolute

Full Information Furnished

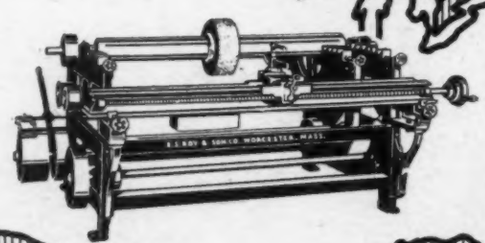
Rogers W. Davis, Southern Agent CHARLOTTE, N. C.

Saco-Lowell Shops, Newton Upper Falls, Mass.

Southern Branch Office GREENVILLE, S. C.

B. S. ROY & SON CO. EST. 1868

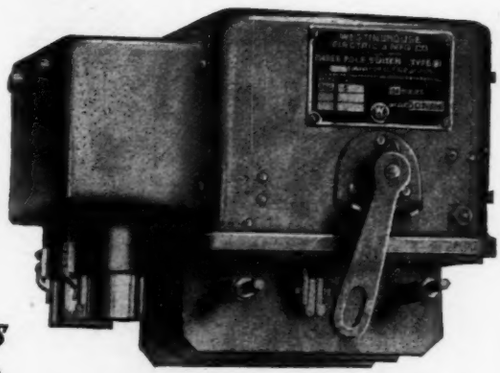
MADE IN AMERICA



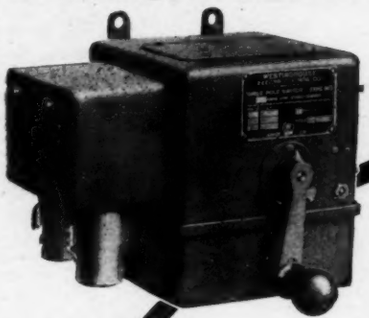
SHIPPED THE WORLD OVER

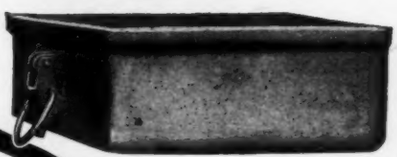
TEXTILE GRINDING MACHINERY WORCESTER, MASS., U.S.A.

-And Now The Type 815-



Starting Switch for Squirrel Cage Motors from one-half to 10 Horsepower





Now that this switch is available at moderate cost, you will not need to worry along with the drawbacks of the old knife switch.

What Type 815 does—

—PROTECTS THE MOTOR AGAINST OVERLOADS

—PROTECTS BOTH MAN AND EQUIPMENT AGAINST ACCIDENTAL STARTING OF MOTOR SHOULD POWER UNEXPECTEDLY RETURN.

—LOWERS THE FIRE RISK

—HELPS TO LOWER MAINTENANCE COSTS

Quick Make and Break—When once started in either opening or closing direction, action of contacts is automatic and instantaneous, and cannot be stopped or retarded.

Rolling Contacts—Arcing is confined to the tips of contacts. The rolling action of contacts prevents roughing or pitting of the contact seats. A strong spring holds contacts firmly in closed position.

Current Carrying Parts Enclosed—This precautionary measure safeguards the employee.

Conduit or Open Wiring—Knockout holes at top and back.

Accidental Starting of Motor Prevented—Hand reset protects workman and equipment against accidental starting of the motor.

Rid of the Oil Nuisance—Switch fitted with asbestos-lined tank and asbestos barriers so that oil need be used only when presence of explosive gases make it necessary.

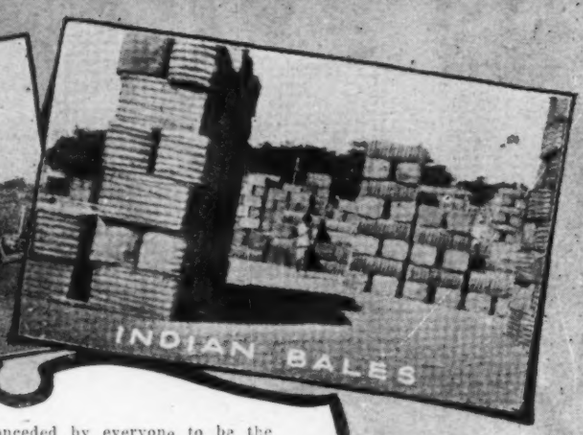
Ask for Descriptive Leaflet 1441 A

Westinghouse Electric & Manufacturing Co.,
East Pittsburgh, Pa.

W WESTINGHOUSE ELECTRIC

Westinghouse

Why Are American Baling Methods The Worst In The World?



AMERICAN cotton is conceded by everyone to be the worst baled of any cotton exported. The reasons for this is that it is too loosely baled, poorly covered and badly sampled.

The time has come when it is a patriotic necessity for high density baling of cotton. The nation demands it, because it means economy in tonnage, a lessened number of cars and ships and a saving of the staple itself.

By the use of the Cummins New Patent Horizontal Baling Presses the cotton crop of this country can be moved by the use of only ¼ the number of cars now required. Likewise the reduction in ship space, both overseas and coastwise, can safely be estimated at approximately 50%.

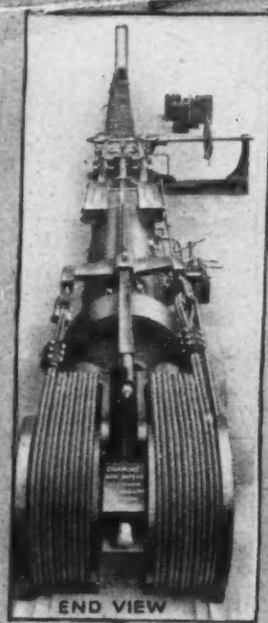
The Cummins Press has an enormous capacity as compared with my American made press. Loose cotton can be thrown in it without any force whatever, and with the same pumping power as now used it will produce HIGH DENSITY bales at a rate of 50 or more per hour. These bales are in one homogeneous piece and not in sections, therefore much superior samples can be drawn.

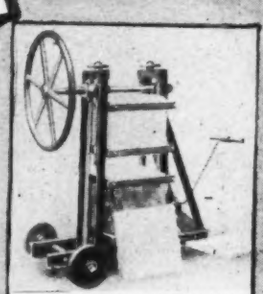
High Density Balage is an absolute necessity to America. It will mean equitable freight rates on cotton and prevent useless waste of energy and materials to the value of more than $100,000,000.00 annually.

Let us confer with you and give you the benefit of our long years of experience in High Density Baling. Write today for the catalog.

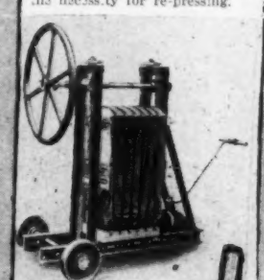
DAVID BRIDGE & CO., Ltd.
Castleton, Manchester, England.

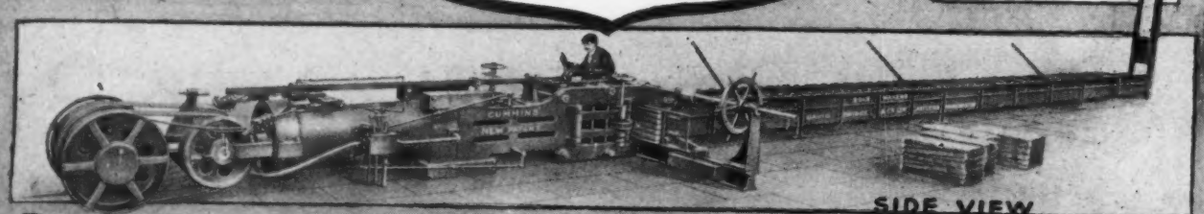
W. D. CRUMPTON, 29 Broadway, NEW YORK
American Representative



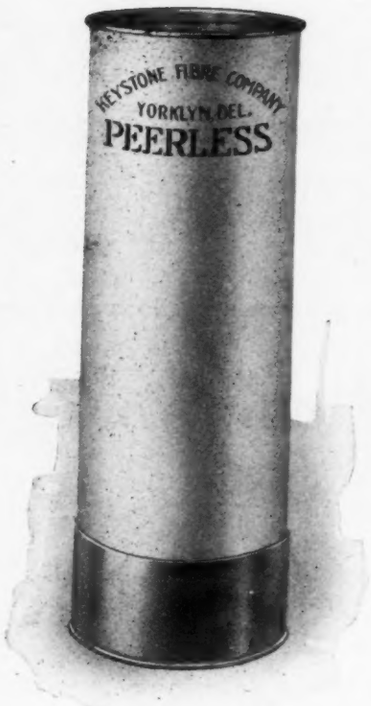


The Merchant Samples Machine by which samples can be drawn from the Cummins bale without the necessity for re-pressing.





CUMMINS NEW PATENT HORIZONTAL BALING PRESS



SERVICE!

And more years of hard service than any other roving can.

We make the Keystone "Peerless" Seamless Roving Cans from start to finish.

Make the fibre that goes into them.

Keystone "Peerless" Seamless Roving Cans

Supervise every stage of their manufacture—

To produce the lightest, yet strongest and longest-lived roving can on the market.

Your mill supply house has them.

"Keystone Holloware" is a booklet describing our complete line of mill equipment. Send for it.

Keystone Fibre Company

Box 46 Yorklyn, Delaware

Thacker Warp Stop Motion Frame

Attachment used whereby open drop wires can be drawn in at frame and transferred to loom as readily and safely as are the closed drop wires

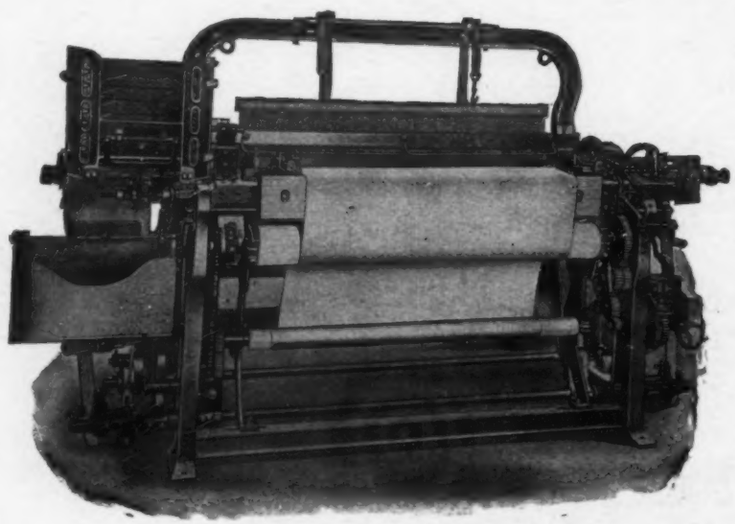
We Offer to the Trade a New Bobbin Stripper for Automatic Loom Bobbins.

Crompton & Knowles Loom Works

Worcester, Mass.

Providence, R. I. Philadelphia, Pa. Paterson, N. J.

Southern Representatives---Alexander & Garsed, Charlotte, N. C.
South American Representatives---W. R. Grace & Co., New York



THE STAFFORD Automatic Loom stands for low operating cost and high quality of fabrics.

It has the widest scope of any automatic loom and can be easily changed over from one fabric to another.

And remember that while saving 50% to 60% in weaving costs for you the weavers can earn from 40% to 50% more wages.

Write for illustrated catalog.

The Stafford Company

Readville, Mass.

J. H. MAYES, Southern Agent
1112 Independence Building, Charlotte, N. C.

Get Away On Time Every Day With The Dictaphone's Help

While some cotton executives are chained to their desks, others are clearing up their work earlier in the day and enjoying more of the outdoor season, because they have simplified their methods of doing business.

The Dictaphone is certainly a big help. It speeds the mail, because it simplifies the processes of getting it out. You dictate and your secretary transcribes your dictation under ideal conditions. Both you and she get away promptly each afternoon, and are the healthier and happier for it.

Phone or write the nearest branch office for 15-Minute Demonstration in YOUR office, on YOUR work.

THE DICTAPHONE

Registered in the U. S. and Foreign Countries

Dept. 137-I, Woolworth Building, New York City

Boston			Providence	
Montgomery	Atlanta	Savannah	Charlotte	Nashville
Clarksdale	Columbus	Chattanooga	Burlington	Knoxville
Jacksonville	Brunswick	Birmingham	Wilmington	Memphis
	Valdosta	Charleston	Albany	

Write for Booklet, "The Man at the Desk"

There is but one Dictaphone, trade-marked "The Dictaphone," made and merchandised by the Columbia Graphophone Company.

"The Shortest Route to the Mail-Chute"

WHITIN MACHINE WORKS

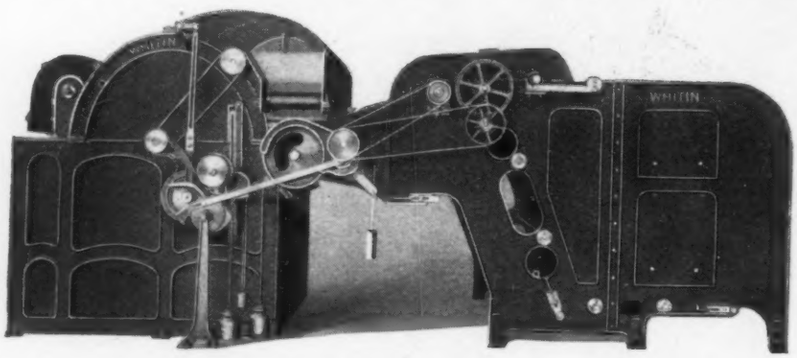
ESTABLISHED 1831

TEXTILE MACHINERY

MANUFACTURERS OF

Machinery for

Cotton, Cotton Waste, Wool, Worsted, Asbestos, etc.



Willow With Automatic Feed

Descriptive Circulars on Request

MAIN OFFICE AND WORKS

WHITINSVILLE, MASS., U.S.A.

SOUTHERN OFFICE CHARLOTTE N.C.

THE FUN-FUL LINE

PLAYGROUND EQUIPMENT

Athletic Recreation—Today's Essential For Labor Contentment and Efficiency

THE question of efficient labor is of vital importance to every textile mill man.

The laboring man of the future is going to be influenced by the advantages offered him and his family by the mill—advantages that attract him and bind him to the job.

Such advantages are no longer considered or classified within the narrow limits of "Welfare Work" but are considered by the far-sighted executive as an absolute necessity that will prove a paying investment.

It required no stretch of imagination to picture the contentment and loyal feeling of employees that are provided with outdoor gymnasia and athletic goods, and nurseries and playgrounds for their families. The workers are healthier in mind and body through the use of such apparatus and they always have something to look forward to at the end of their day's arduous labor. Playgrounds for the children uplifts the standard of health throughout the entire village, increasing the ability of the larger operatives to work more efficiently and contentedly.

In short, there is a reaction throughout your entire family of operatives—a reaction mentally, morally and physically that cannot help but be profitable in dollars and cents to the mill.

FUN-FUL Playground Apparatus is already installed in hundreds of the largest mills in the country who are finding that it's a paying investment—finding that FUN-FUL Apparatus is made to stand the use and abuse of the roughest operatives. The line includes Swings, Slides, See-Saws, Ocean Waves, Giant Strides, Outdoor Gymnasia, Athletic Goods of all kinds, etc.

Ask today for complete catalog.

Hill-Standard Co., General Sales Office, Conway Bldg., Chicago
Factories: Anderson, Ind., Kokomo, Ind.

Edward Ferger, Southern Representative, 276 Lucile Ave., Atlanta

The International Products' Creed

WE are International Time Recorders—Servants of all peoples. Our Ancestry dates back over thirty years.

We are the first of our Race, and have always been First in the Race of our Kind.

Our policy is Progress—our Creed is Punctuality—our Mission is to promote the interests of every business and of every man and woman in business.

Our ceaseless Service is Equalizing the Energies and Earnings of millions of workers in all lines of endeavor—Everywhere.

Our unbiased vigilance Protects the Worker and Corrects the Shirker. It transforms Idleness into Activity. It fills the Time Schedules of Commerce with Cheerful, Willing Co-operation. It Enhances the Value of Time and Decreases the Cost of Labor by Increasing Production.

Our Duties are Righteous—Our Authority is Recognized. In the true and unvarying language of the sun, we attest the Beginning and End of Effort and Achievement.

To ignore us is **NEGLIGENCE**. To doubt is **HERESY**. To fear us is **FOLLY**. To trust us is **WISDOM**. To **EMPLOY US IS SECURITY**.

We are made in 260 models---either electrically-operated or spring-driven ---and adapted to businesses of all kinds and all sizes. Learn in detail what we do for your service and protection. Illustrated literature will be sent promptly upon request.

INTERNATIONAL TIME RECORDING CO.

General Offices: 50 BROAD STREET, NEW YORK
Works: Endicott, N. Y.; Toronto, Canada
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London Office: 57 City Road, Finsbury, London, E. C., England
Paris Office: 75 Avenue de la Republique, Paris, France
Offices and Service Stations in all principal cities of the world.

Saving $12,000 a Year by scrubbing floors clean

Because they realized that clean floors were necessary to efficiency,

—because they knew that scrubbing by hand and ordinary mopping were not competent methods,

—and because they were willing to be shown a better way,

—a well-known concern installed a set of Finnell scrubbing equipment.

In one year they saved between $2,900.00 and $3,000.00. About a year later they bought two additional sets. With these their total annual saving comes to about $12,000.00.

Finnell scrubbing outfits are made up of various units, according to the requirements of each case. Whatever the nature or size of the mill, there is a Finnell combination just right for the economical maintenance of *perfectly clean* floors.

Any of our representatives can give you more definite facts and figures, particularly about the cleaning of your own floors. This information you may obtain free of cost and without obligation by writing to our Chicago office.

American Scrubbing Equipment Co.

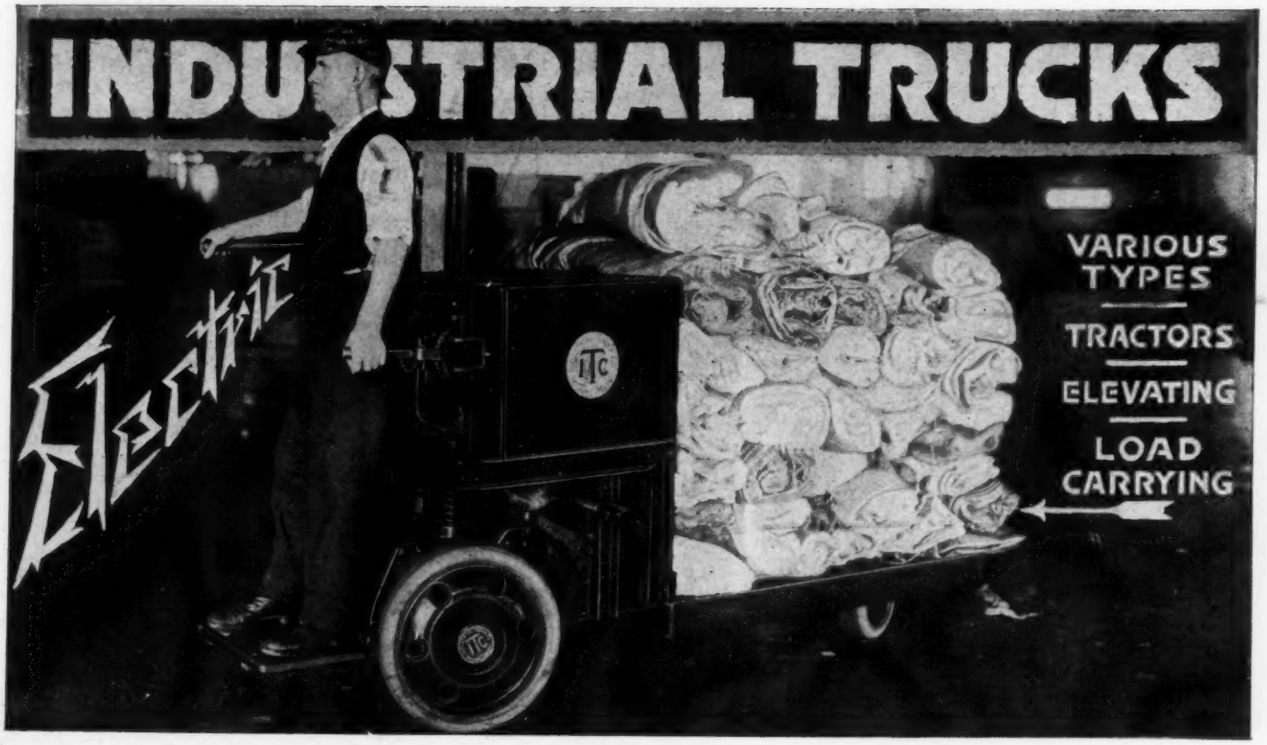
Formerly Finola Mfg. Co.

General Offices: 180 N. Wabash Ave., Chicago. Factories: Hannibal, Mo

Atlanta	Buffalo	Denver	Los Angeles	Newark	Philadelphia	Salt Lake City
Baltimore	Chicago	Detroit	Louisville	New Orleans	Pittsburgh	San Francisco
Boston	Cincinnati	Indianapolis	Milwaukee	New York	Providence	Seattle
	Cleveland	Kansas City	Minneapolis	Omaha	St. Louis	

FINNELL SYSTEM

OF POWER SCRUBBING



Keep Things Moving---With an "I T C" Truck

THE ITC Electric Load Carrying Truck is a stu dy, compact tractor, designed for heavy platform trucking. It should be a part of the regular equip nent of every cotton mill and storehouse. For quick and efficient loading and unloading of raw cotton, baled or unbaled, the ITC Storage Battery will accomplish the work of a score of men.

The ITC Industrial Tractor is a tremendous time, expense and labor saver. It keeps everything moving, smoothly and quickly. Its compactness, small turning radius, comfortable operating position, safeguard the operator. All operating parts are dust proof and airtight.

NO TRACTOR ON THE MARKET is as mechanically sound as the ITC. It is without weakness or defect in design or construction. Adequate battery space and floor clearance are the result of careful planning and testing.

Through narrow intersecting aisles, over crowded platforms, the ITC is easily steered with its short wheel base. Unskilled labor, a woman or a boy, can be employed as operator, as the interlocking safety device guards against accidents arising from careless operation, making it practically fool-proof. Speeds are interchangeable, four speeds ahead or reverse, and the brakes so adjusted that it can be brought to a stop within a few inches. The motors are especially designed for heavy duty, and the possibility of overloading.

Facts and figures stating the satisfactory service the ITC Electric Tractor in many mills and warehouses are yours for the asking. WRITE TODAY.

INDUSTRIAL TRUCK COMPANY Div.

OF COWAN TRUCK CO., HOLYOKE, MASS.

The Lovingood Co.,
406 Peters Bldg., Atlanta, Ga.

107 CANAL STREET

F. J. Gauntlett,
Wilkins Bldg., Washington, D. C.

TRACTORS, ELEVATING & LOAD CARRYING TRUCKS

ELWELL-PARKER

ELECTRIC INDUSTRIAL TRUCKS AND TRACTORS

Cost least to operate in textile mills, whether based on
tonnage transferred,
distance traveled,
or time in service.

Simply constructed;
Adaptable to any mill;
Flexible in close quarters;
Easily operated by unskilled labor.

AN INVESTMENT

in trucks will bring returns, the majority saving their purchase price in a few months.

One man with an Elwell-Parker truck or tractor will haul six to ten times the material he formerly did in the same time with a hand truck.

There Is Nothing Experimental

or untried in any of the many types offered, it being simply a case of choosing the one to fit your job.

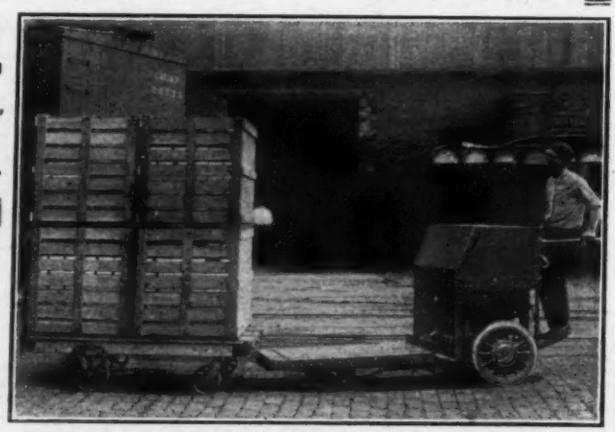
PROOF

The fact that Elwell-Parker trucks built years ago are giving satisfactory service today proves the very best of design, material and workmanship goes into each of them. Slightly higher first cost for quality is forgotten when additional equipments are required as evidenced by volume of repeat orders. If you are not an expert on inter-department traffic ask us. We have solved hundreds of transfer problems.

THE ELWELL-PARKER ELECTRIC CO.

"Pioneer Builder of Electric Industrial Trucks."

CLEVELAND, OHIO U. S. A.



Offices in All Principal Cities.

New York	Richmond	Dayton	Milwaukee
Boston	Atlanta	Toledo	Minneapolis
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SOLVING HAULAGE PROBLEMS

THIS BOOK TELLS HOW

Your time, like most textile executives, is doubtless pretty well taken up, but we believe you will find the time profitably spent by reading this interesting book—for from its pages you may secure suggestions which will mean dollars and cents to your mill.

It explains systems that have solved the haulage and trucking problems of other manufacturers—how they are moving more material more quickly and with fewer men and enable you to put these men to more productive work, relieve congested aisles filled with truckers,—in short

"THE TRACKLESS TRAIN"

is a story of lowered costs—of increased mill efficiency. Every mill of from 10,000 to 150,000 spindles will find "The Trackless Train" system the only true economical way to handle the moving material in and about the mill—a completely charted transportation system adapted to the peculiar requirements of each mill.

FILL OUT AND MAIL THIS COUPON TODAY →

Just tear out this page and hand it to your stenographer —the book will be sent to you immediately without cost or obligation.

Mercury Mfg. Co.,
4120 So. Halsted St.,
Chicago, U. S. A.: You may send me your free book, "The Trackless Train."

Name .....

Mill .....

City ..... State .....

MERCURY MANUFACTURING COMPANY

4120 South Halsted St., Chicago, Ill., U. S. A.
Southern Office: Sam C. Moyers, P. O. Box 1176, Savannah, Ga.

New York	Albany	Savannah
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Cleveland	Columbus	Detroit
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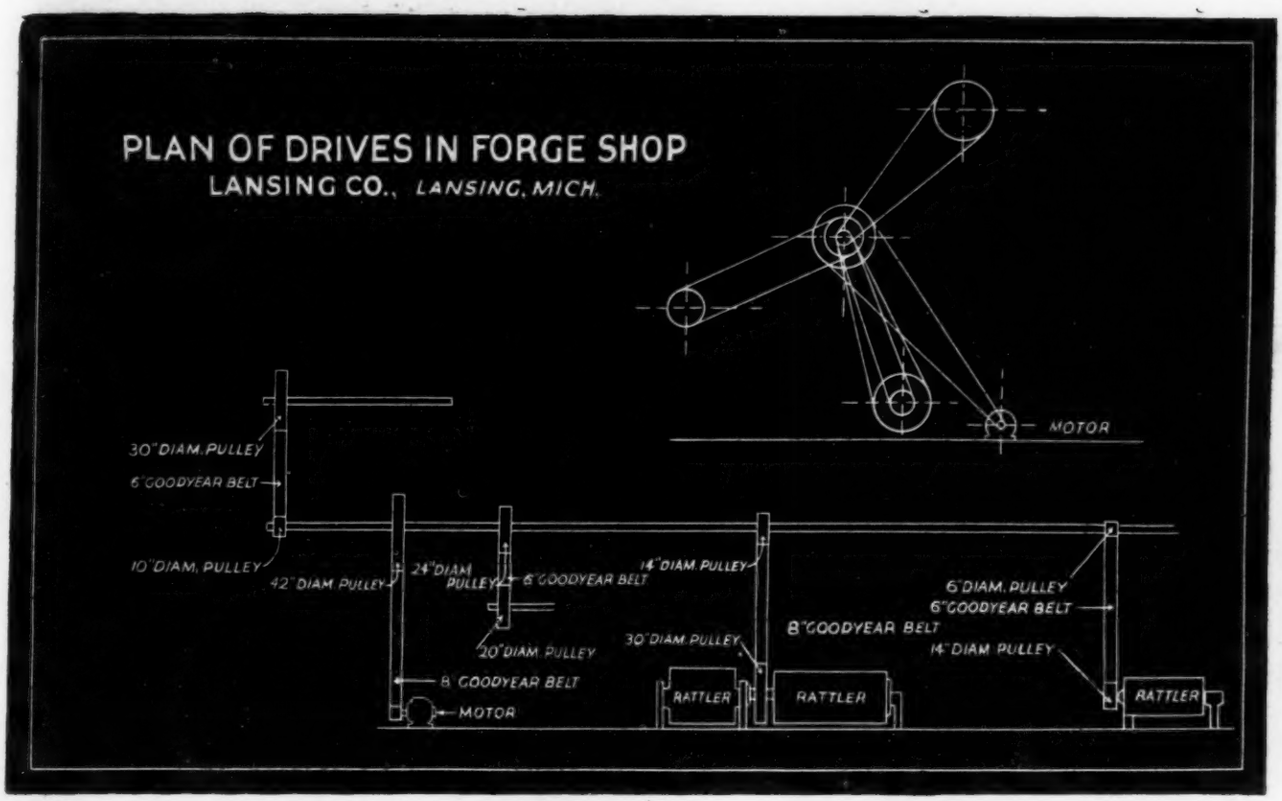
White Trucks

THE outstanding reason why White Trucks are so generally preferred in the transportation of cotton and textiles is that *they do the most work for the least money.*

Where cost records are kept, Whites invariably show lower operation and maintenance costs and a higher percentage of days in active service. Experienced users buy Whites because they are known money savers.

THE WHITE COMPANY
CLEVELAND



$11.66 Lower Price, $60.01 Lower Cost — and the G. T. M.

One day in the summer of 1917 a G. T. M.—Goodyear Technical Man—called on the Lansing Company in Lansing, Michigan. He explained the Goodyear Plan of selling belts, of making a diagnosis of the conditions surrounding each drive and then prescribing the proper belt to meet those conditions. It seemed to him the men he talked with rather thought that his belts must be very high priced.

But they showed him a motor drive, operating a line shaft, on which a double belt generally gave only six or seven months' service. He studied that drive, noted the excessive heat of the forge-shop in which it was, noted the presence of grit and dust, made his measurements of power, speed, distance between centers, pulley sizes and the like. Then he prescribed an 8-inch 5-ply Goodyear Belt of Blue Streak Construction.

The price was lower by $11.66 when compared with that of the belt then just about giving out. So they thought they might as well give him a trial order. The belt came and was installed August 9th, 1917.

In spite of the heavy duty drives from the line shaft —drives operating rattlers and an elevator for hoisting iron to the foundry—it gave them a trouble-free service that they had never hoped for before. And it lasted seventeen months—although its price was $11.66 lower than that of the seven months' belt.

Price is what you pay for an article; its cost is what you get out of it. The old, expensive belt was priced at $33.88 in the summer of 1917. It cost $4.84 per month for its seven months' life. The Goodyear Belt specified by the G. T. M. was priced at $22.22—and cost $1.31 per month for its seventeen months' service.

Its cost was $3.53 less per month—$60.01 less for the seventeen months. But long before it was worn out, the G. T. M. was asked to analyze another drive, one from the line shaft to a pair of rattlers. He specified an 8-inch 5-ply Goodyear of Blue Streak Construction. After it had been operating sixty days, the superintendent was so well pleased with its greater efficiency and freedom from trouble that he ordered another according to the G. T. M.'s specifications, and later still another; by Jan. 10th, 1919, there were five Goodyear Belts in the forge shop alone.

If you have a belt-eating drive in your plant, send for a G. T. M. In most cases he can save for you both in price and cost. His services are free, for the business sure to result within a few years more than pays for our investment in having him study your drives and specify the right belt to meet your conditions.

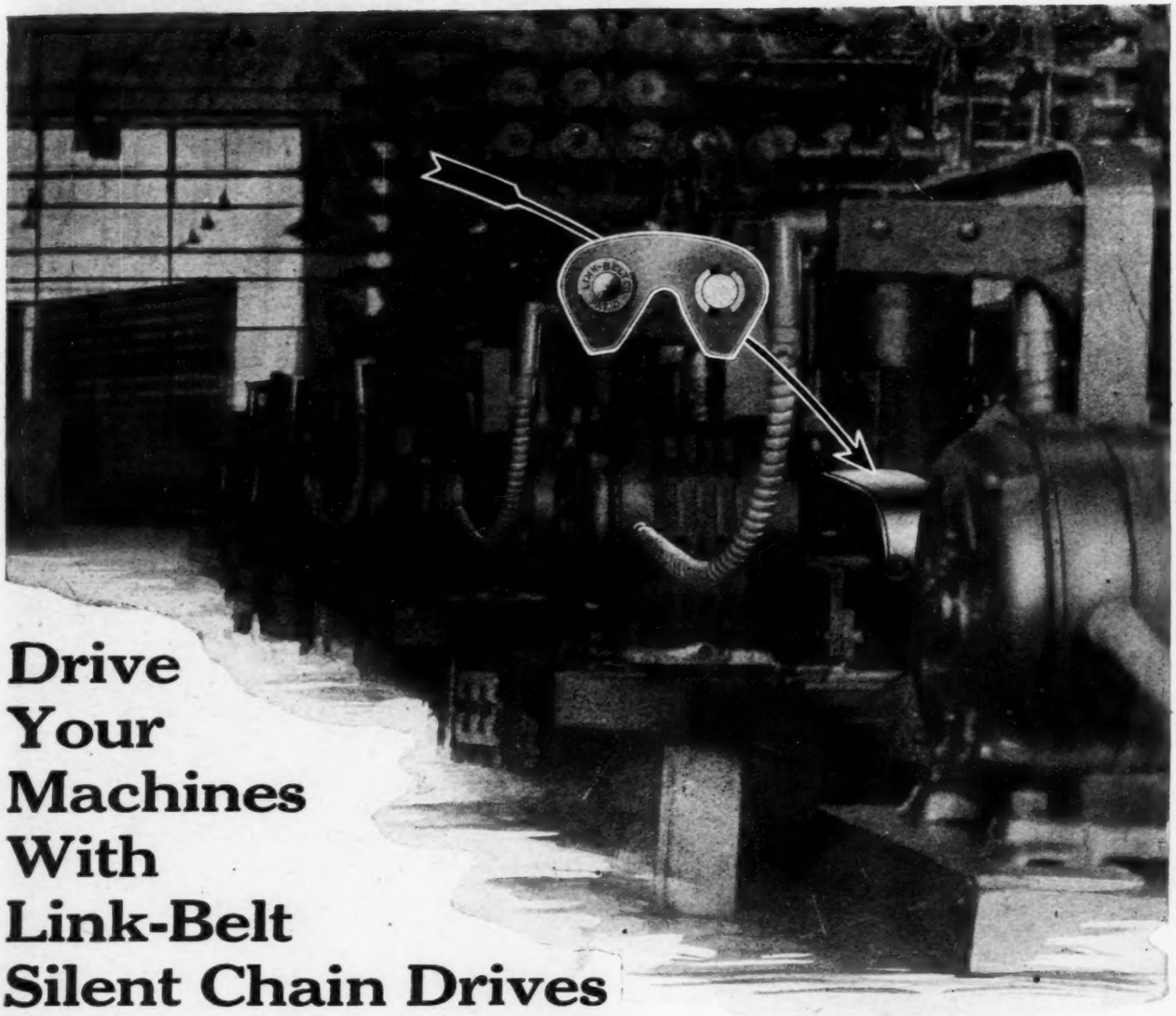
THE GOODYEAR TIRE & RUBBER CO., AKRON, OHIO

BELTING · PACKING · HOSE · VALVES

GOODYEAR

AKRON

COCHECO
BELTING
Known as "Old Reliable" Since 1842
Don't keep on wasting money at the coal pile, in machine output and labor cost by using cheap leather belting. Give "old reliable" Cocheco Belting a chance to save you money.
Cocheco Belting—tanned by the slow-but-sure white oak bark process, curried, stretched, stripped, properly matched and inspected all along the line—can be depended on to give maximum production at minimum power cost.
Cocheco Belting is Quality Belting—sold on merit. Ask for more information.
I. B. WILLIAMS & SONS, Dover, N. H.
BOSTON, MASS., 157 Summer Street NEW YORK, N. Y., 71-73 Murray Street CHICAGO, ILL., 14-16 N. Franklin Street



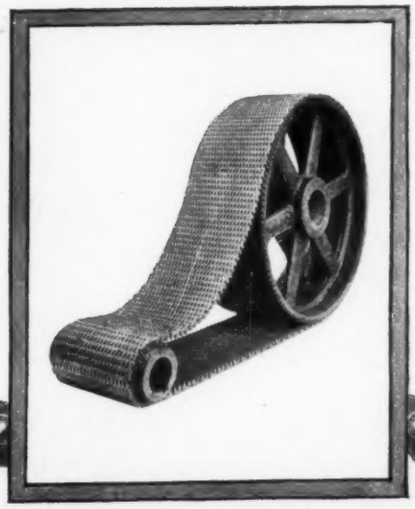
Drive Your Machines With Link-Belt Silent Chain Drives

UPON the power transmitting medium depends not only a saving or a waste of power, but, what is more important, an increase or decrease in the production. Also a uniformly-perfect product results from the use of a uniformly smooth-running drive. Therefore the selection of the proper driving medium should be given the attention it deserves. The day has passed when anyone can afford to waste power (money), or fail to adopt modern methods which mean "safety-first" and an increase in production—equipment such as the Link-Belt Silent Chain Drive, which requires minimum attention and gives such reliable, efficient service.

Link-Belt Silent Chain is "flexible as a belt, positive as a gear and more efficient than either."

98.2% on actual test. Adopt it on all your machines. Write for Textile Book No. 258

5 H. P. Link-Belt Silent Chain Drives (encased) operating Twisters, Thatcher Spinning Co., Inc., Chattanooga, Tenn.



LINK-BELT COMPANY 348

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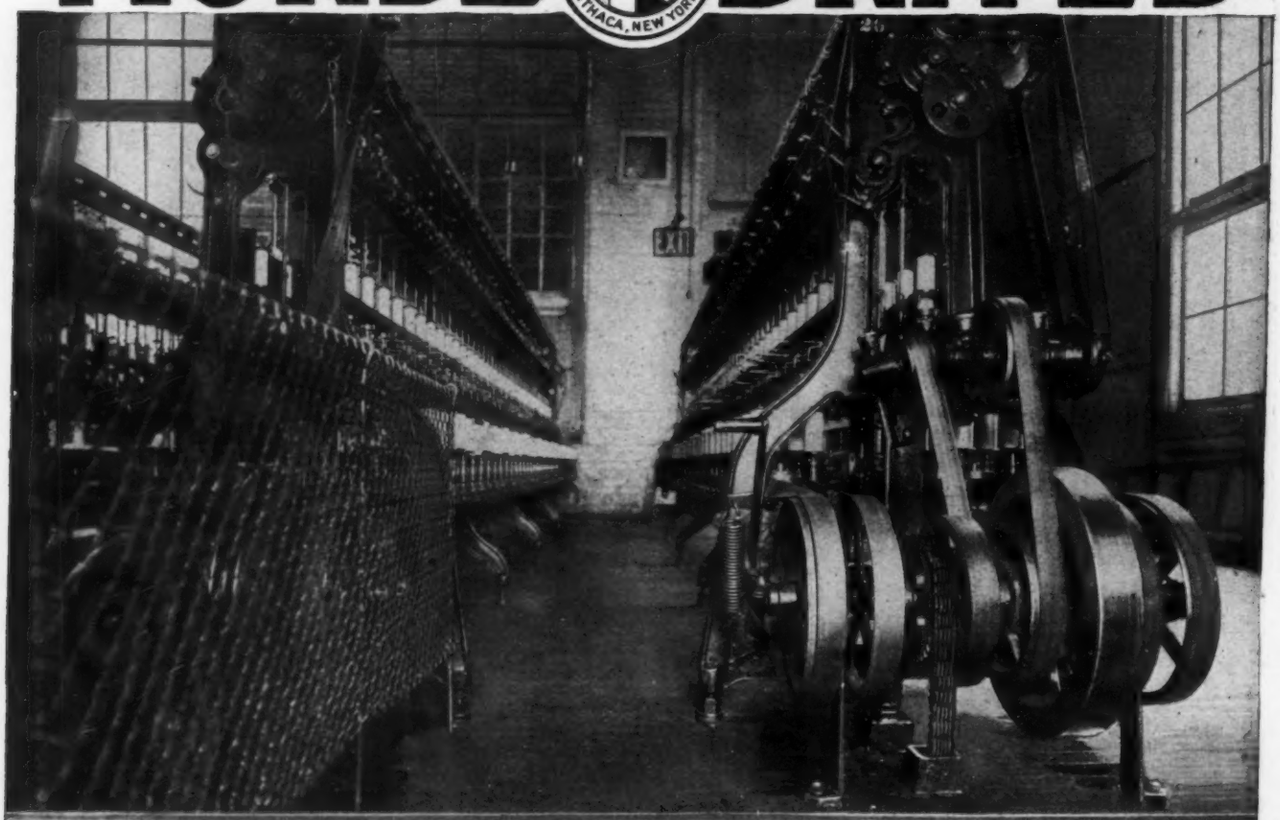
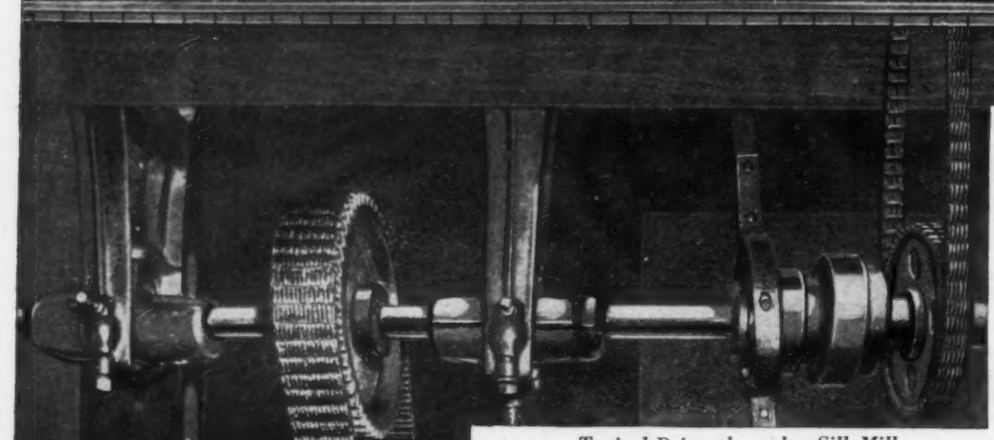
New York	299 Broadway	Kansas City, Mo.	306 Elmhurst Bldg.		
Boston	49 Federal St.	Seattle	576 First Ave. S.		
Pittsburgh	1501 Park Bldg.	Portland, Ore.	First and Stark Sts.		
St. Louis	Cent. Nat'l Bank Bldg.	San Francisco	582 Market St.		
Buffalo	547 Ellicott Square	Los Angeles	163 N. Los Angeles St.		
Wilkes-Barre	24 Nat'l Bk. Bldg.	Toronto, Can.	Canadian Link-Belt Company, Ltd.		
Huntington, W. Va.	Robson-Prichard Bldg.	Denver	Lindrooth, Shubart & Co., Boston Bldg.		
Cleveland	429 Rockefeller Bldg.	Louisville, Ky.	Frederick Wehle, Starks Bldg.		
Detroit	932 Dime Bank Bldg.	New Orleans	C. O. Hinz, Hibernia Bank Bldg.		
Minneapolis	418 S. Third St.	Charlotte, N. C.	J. S. Cothran, Com'l Bank Bldg.		
		Birmingham, Ala.	S. I. Morrow 720 Brown-Marx Bldg.		

MORSE DRIVES





The Efficiency of

MORSE Drives in Textile Mills

Recognized by their Superior

PRODUCTION

Typical Drives through a Silk Mill

Back of every installation there is evidence that MORSE Silent Chain satisfies the call, and has given the service wanted and expected.

MORSE DRIVES have advanced in use because they have earned the endorsements of our customers and we have given our fullest measure of assistance.

MORSE CHAIN CO., Ithaca, N. Y.

Largest Manufacturers of Silent Chains in the World

MORSE ENGINEERING SERVICE — **Address Nearest Office** — **ASSISTANCE WITHOUT OBLIGATION**

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WRITE FOR FREE BOOKLET

Strom BEARINGS

RIGID adherence to those high standards of quality and service which have made Strom Bearings standard equipment wherever a shaft turns has resulted in the unusually heavy demand from all parts of the country now being made upon us for Strom equipment. In many lines of industry Strom Bearings are multiplying power and reducing its cost by practically eliminating power destroying friction.

U.S. Ball Bearing Mfg. Co.

(*Conrad Patent Licensee*)

Palmer Street and Kolmar Avenue, Chicago, Illinois

35

Ladew

The biggest item in belting cost is the value of the time lost while the belt is being repaired or relaced or replaced.

Doesn't that make the first cost of a belt rather a secondary matter—except as it indicates what the time-proof quality of the belt may be?

Doesn't it emphasize the fact that a few dollars "saved" on the purchase price of a belt is mighty poor economy?

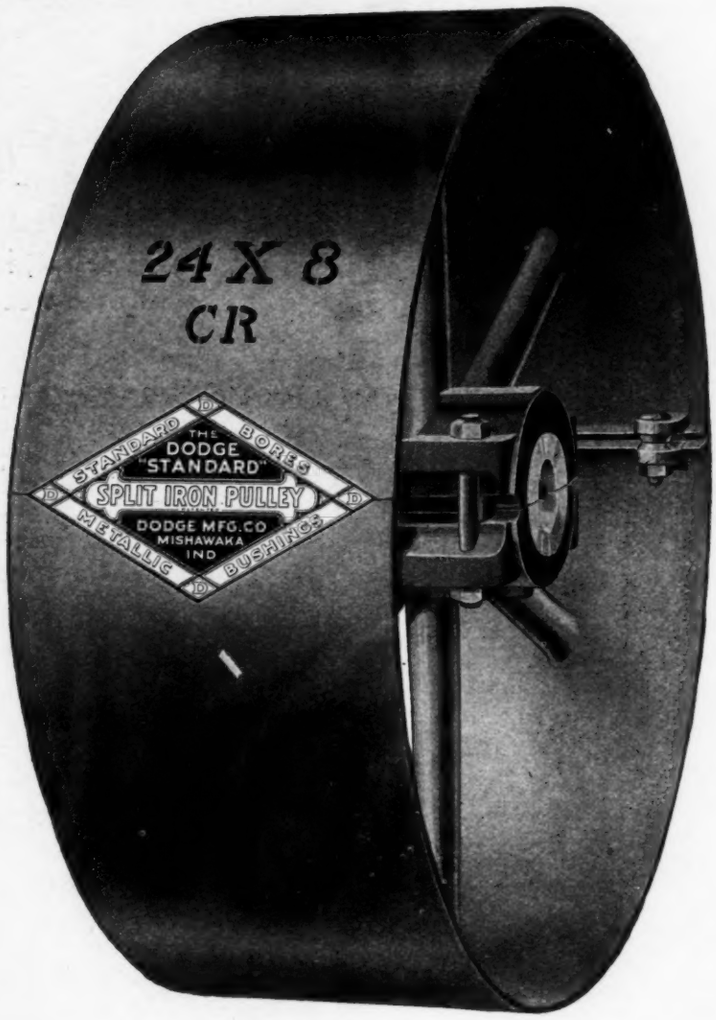
It is a matter of record that no belt will give longer, more uninterrupted service than **"Turtle" Leather Belting.**

Therefore—buy **"Turtle"** if you want to be sure of the utmost in service value.

EDW. R. LADEW CO., INC.
GLEN COVE, NEW YORK, U.S.A.

Branches and Representatives in All Principal Cities of the World Carry Complete Stocks. Look in your 'Phone Book for Local Address.

AP-33



This trade mark on all metal goods

Your insurance against delayed production

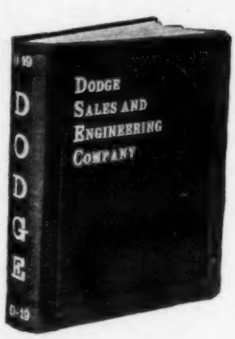
Here is a metal pulley that will positively hold its shape and balance

Dodge Iron Split Pulleys are machine molded from metal patterns, carefully finished, faced on the rim and lacquered. Every pulley is absolutely round and in perfect balance before it leaves our shops.

Its shape and balance are permanent for cast iron is non-flexible. It is a split pulley and uses the bushing system.

In damp places, amid acid fumes, where a flywheel effect is desired, wood or steel pulleys are unsatisfactory. Under these conditions, the Dodge Standard Iron Split Pulley gives continuous, economical service.

Ask the Dodge dealer in your town to show you this pulley. You will appreciate its good qualities at a glance.



The new Dodge catalog should be in the hands of every power user. Send for your copy.

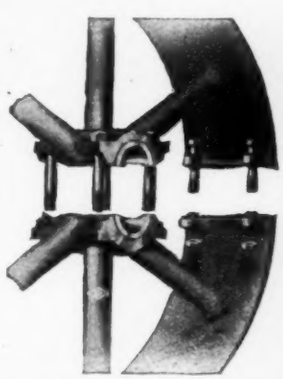
Dodge Sales & Engineering Company

Distributor of the products of the Dodge Mfg. Company

General Offices: Mishawaka, Ind. Works: Mishawaka, Ind. and Oneida, N. Y.

Dodge Branch Warehouses

Philadelphia Cincinnati New York Chicago St Louis Boston
Atlanta Pittsburgh Minneapolis Dallas Providence Seattle Newark



Rim edges are fractured, then drawn together by bolts through rim lugs. A perfect joint.

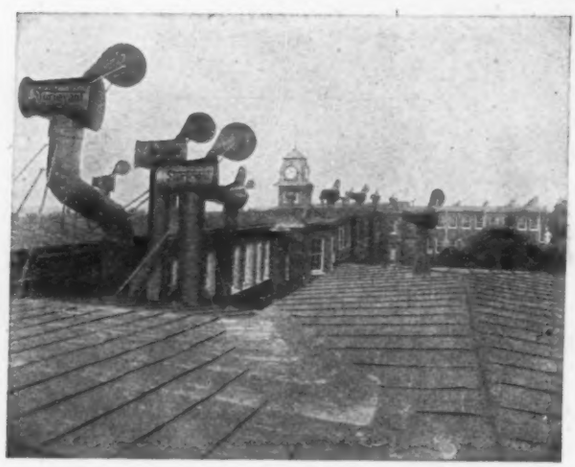
DOES VENTILATION PAY?

That depends upon the system of ventilating you select, its initial cost, the up-keep cost, how you figure the ultimate costs, and the percentage of efficiency.

I. The system should be designed for your needs by trained Engineers, specializing in ventilation.

II. Its initial cost is determined by the particular problem you have. Any system which does not fit your requirements is dear at any price. It should be designed to handle your problem with the least possible outlay of capital. To be sure of that, you gamble needlessly unless you take advantage of our Sixty years of experience, and of the services of our trained Engineering Staff.

III. To figure ultimate costs is difficult. See how the Hamilton Watch Co., of Lancaster, Pa. figure it; Here is their plant:



GENTLEMEN:—We sent you an order for another 20-inch Ventilator today; this makes twenty-eight Auto-force Ventilating pumps which we have purchased from you, twenty-seven of which are doing such splendid work, and we feel sure the other will do the same. It might be of interest to you to know that we installed this system at a total cost of approximately $2800.00, about $100.00 per machine, and if the cost were $28,000.00 we would not be without it.

We regard it as a most valuable addition to our business, which is proven in many ways; the health of our employees, numbering 785, is very much improved over other years, and the Relief Association has made no assessments and has had very few sick benefits to pay, and it has done away with much rust.

I offer you this for the good of both yourselves and any other factory who desires to equip themselves with this really valuable appliance to their business.

Wishing you every possible success, we remain, etc.

Hamilton Watch Co.

IV. **Sturtevant** AUTOFORCE VENTILATORS use Nature as the source of energy, so you have no operating cost. We guarantee their efficiency which is 100% to 200% in excess of any other type of natural ventilator.

Our Engineering Staff will analyze your conditions and recommend a solution, all without obligation to you. Would this not be valuable information to have? Just drop us a line.

B. F. STURTEVANT COMPANY

Hyde Park, Boston, Massachusetts.

AND ALL PRINCIPAL CITIES

WE GUARANTEE Uniform Soft Water Supply

NATURALLY, you will judge a Water Softener largely by its ability to give you water of no hardness *all the time.*

Nature makes no mistakes. Refinite is given its water softening properties by Nature herself. Automatic, certain, perfect —so dependably the same in its action day in and day out that we guarantee uniform soft water from every installation!

Textile mills report that since the use of Refinite Perfect Soft Water their dyeing formulas act with regularity, and give them uniform, even penetration. Colors impossible with hard or partially softened water are now readily obtained, and they have completely eliminated the "lists," spoilage, "seconds," poorly matched shades and imperfect colors due to lime and magnesia in the hard water.

Refinite not only improved quality and prevented waste of time, labor and materials, but proved a profitable investment in its savings on soap, chemicals and fuel.

Refinite softened water is drinkable—a water that will not tender, weaken or in any way contribute to the damaging of fibre.

The Refinite Softener is the only system using Refinite natural mineral. Easily and quickly installed—Occupies least space for the volume of water handled—Requires no expert supervision—Built in sizes to suit all needs—Very reasonable in price. It produces Perfect Soft Water at the lowest cost of operation.

Let us give you full particulars about a Refinite Softener for your use. Write, wire or telephone your nearest office. A Refinite engineer is at your service without obligation.

THE REFINITE COMPANY

REFINITE BLDG.

OMAHA, NEB.

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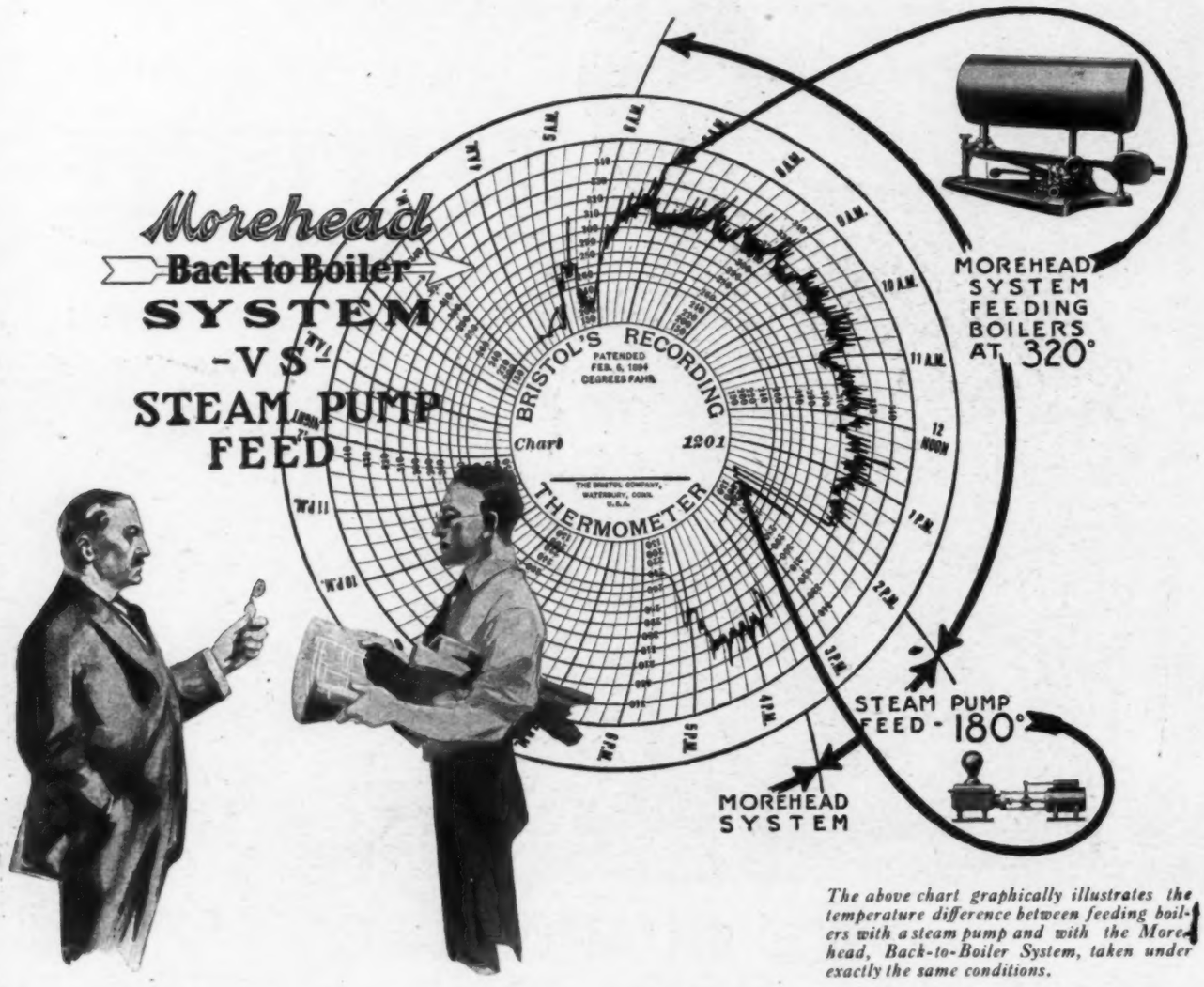
SAN FRANCISCO, 419 Call Bldg.
LOS ANGELES, 303 Story Bldg.
PUEBLO, Thatcher Bldg.
SALT LAKE CITY, 524 Newhouse Bldg.



The above chart graphically illustrates the temperature difference between feeding boilers with a steam pump and with the Morehead, Back-to-Boiler System, taken under exactly the same conditions.

Twentieth Century Steam Drainage and Boiler Feed

Manufacturers throughout the country are installing the Morehead Back-to-Boiler System because—

It improves the circulation of steam through steam heated machines.

It saves one per cent of fuel for every ten degrees increase in the temperature of feed water.

It pays for itself—often during the first few weeks.

Morehead engineers will be glad to explain in detail just how the Morehead System may be applied to reduce fuel expense in your plant. Write for our catalog and complete particulars.

Morehead Manufacturing Co.

DETROIT, MICHIGAN

Canadian Morehead Manufacturing Company, Woodtick, Ont., For Dominion of Canada.

The "Morehead" Return Trap.

Positively Drains All Types of Steam Apparatus

Delivers Condensation And Feed Water to Boiler Under All Conditions at Maximum Temperature

Your Fuel Bills are Less

Morehead

"BACK-TO-BOILER-SYSTEM"

ANNOUNCEMENT:

The use of zeolites for softening water is broadly protected by United States patents which The Permutit Company owns.

ANY CONCERN using a ZEOLITE WATER SOFTENING PLANT not purchased from The Permutit Company, IS AN INFRINGER and is LIABLE TO SUIT.

We have brought suits against users of **infringing plants of different make**, and the trade is **warned** that we shall take the necessary steps to fully protect our legal rights.

Zeolite water softening plants were **first introduced and installed** by us.

Zeolite water softening plants are the only commercial non-distilling plants which will produce

Water of Zero Hardness.

THE PERMUTIT COMPANY

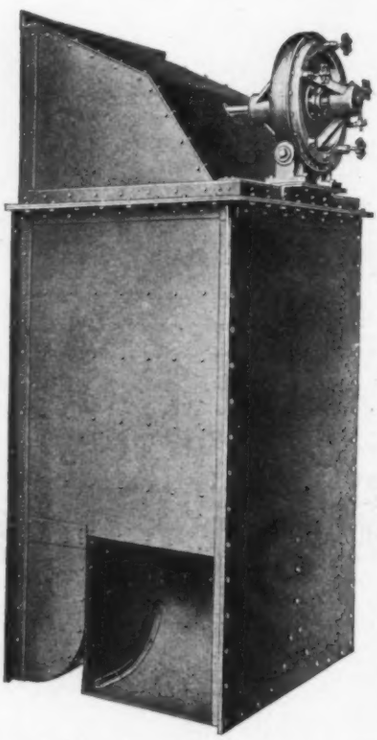
Water Rectification Systems

440 Fourth Avenue **New York City**

THE UNIT HEATER

was first placed in use in 1870 by B. F. Sturtevant, founder of the B. F. STURTEVANT COMPANY. Since that time, through careful study and engineering practice, the present day Portable Unit Heater has been perfected. It is just one of the large and growing family of

Sturtevant
(REG. U. S. PAT. OFF.)



Independent Unit Heater.

It's relation to the heating of shops and factories is similar to replacement of the old line shafting, by the unit motor drive.

It eliminates expensive, cumbersome overhead piping; it warms just the portion you wish heated; the exhaust steam from the small turbine, driving the disc or propeller fan, heats the steam coils. It's economy is apparent, and it's efficiency has been proven.

The following are typical users:

HYDRAULIC PRESSED STEEL CO.
AMERICAN LOCOMOTIVE CO. (5 plants)
BATES MACHINE CO.
CLEVELAND WINDOW GLASS CO.
SCOVILLE MFG. CO.
MERRILL SILK CO.

Our Engineering Staff, with the benefit of this fifty years of experience is at your service. Estimates given without obligation.

B. F. STURTEVANT COMPANY

Hyde Park, Boston, Mass., U. S. A.

AND ALL PRINCIPAL CITIES

Industrial Housing

QUICK SHIPMENT

A Train Load of ALADDIN Houses Per Day

Depending upon size of house, we load from one to three complete houses in each car. Normally, shipments arrive at Atlantic Coast points in about six days after leaving our mill.

QUICK RESULTS

A Gang of 120 Men Can Erect 10 ALADDIN 5-Room Houses Per Day

Aladdin Houses are Readi-Cut. Every piece of material, joists, studs, rafters, sheathing, siding, flooring, interior finish, is cut to proper size, marked and numbered and ready to nail in place.

SERVICE PLUS

Immediate Action on Any City Project—or Any Housing Problem

Our plans are drawn, prepared and finished for cities of from 300 to 3,000 poulation. Experienced town planners, landscape achitects, engineers and builders have spent months of study and work in their production. This service becomes a part of every Aladdin Housing transaction—a single house or a complete city.

Over One Thousand ALADDIN Houses Carried in Stock

All lumber, shingles, lath, millwork, siding, flooring, interior finish, plaster, hardware, paints, nails, are carried constantly in stock, ready for instant shipment.

Hundreds of American Corporations Have Built ALADDIN Houses

As many as five hundred Aladdin houses have been sold to a single corporation. Re-orders are constantly received from corporations who have tested our houses by actual purchase and erection.

A Single House—or A Complete City

The Aladdin Company will quote you a definite price on a single house or complete cities of 300, 500, 600, 1,000, 1,500 and 3,000 population. These cities are now listed in our book on Industrial Houses. Cities include homes, stores, churches, schools municipal buildings, water distributing systems, electric light plants and distribution, sewerage systems, trees, etc. "Book of Aladdin Homes" No. 620 with full information, floor plans and prices will be mailed on request. Aladdin Book "Industrial Housing" mailed only to inquiries written on business or official stationery.

Complete Cities

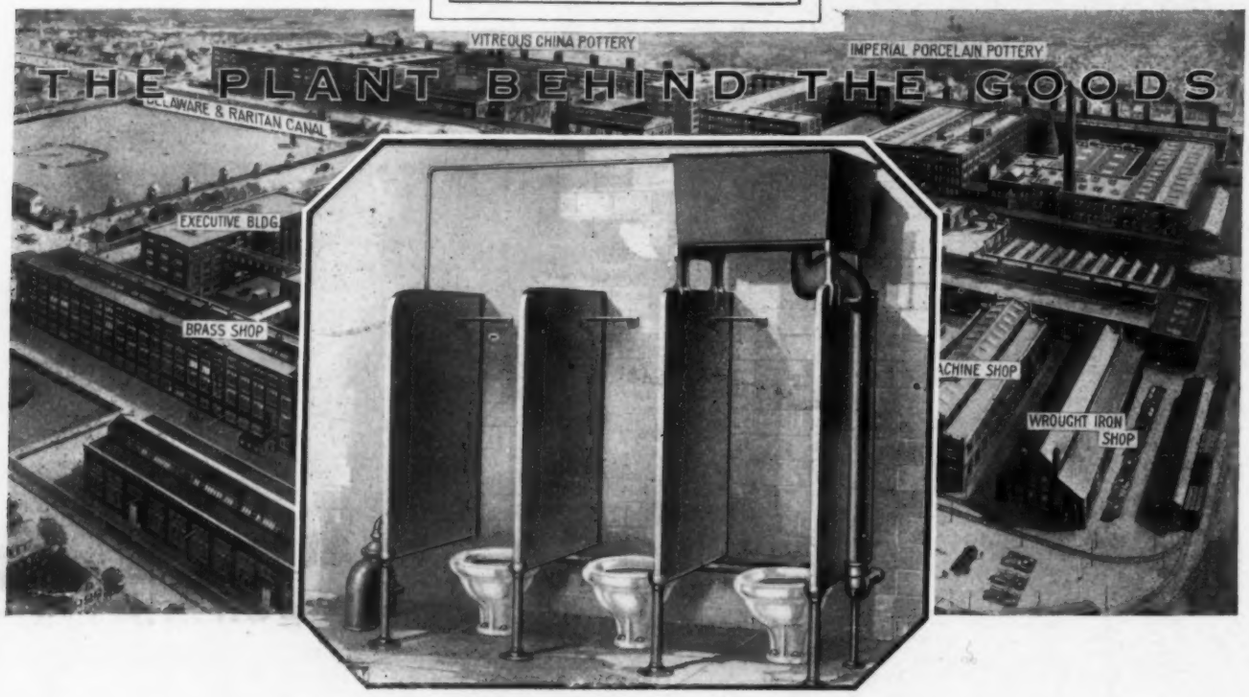
-or a Single House

ALADDIN READI-CUT HOUSES Sold By The GOLDEN RULE

The Aladdin Co.

621 SOVEREIGN AVE., HOME BUILDERS TO THE NATION TOWNBUILDERS TO THE NATION HATTIESBURG, MISS.

1828 MOTT 1919



MOTT PRIVUS LATRINES FOR MILLS

The Privus latrine embodies the essential requirements of a water closet for cotton mills and factories.

1st. It is built to withstand hard usage, being made of Mott extra heavy vitreous ware.

2nd. The bowl has an extra large water area and the trap has a very deep seal, being provided with a clean out so that any obstruction can readily be removed.

3rd. The water way and trap are very large so as to practically eliminate any danger of clogging.

4th. It has the advantages of the individual closet with those of the water closet range while the flush may be regulated as desired and a minimum of water used.

The Privus latrine is giving satisfactory results in cotton mills and factories throughout the country—a list of those in your locality will be furnished on request.

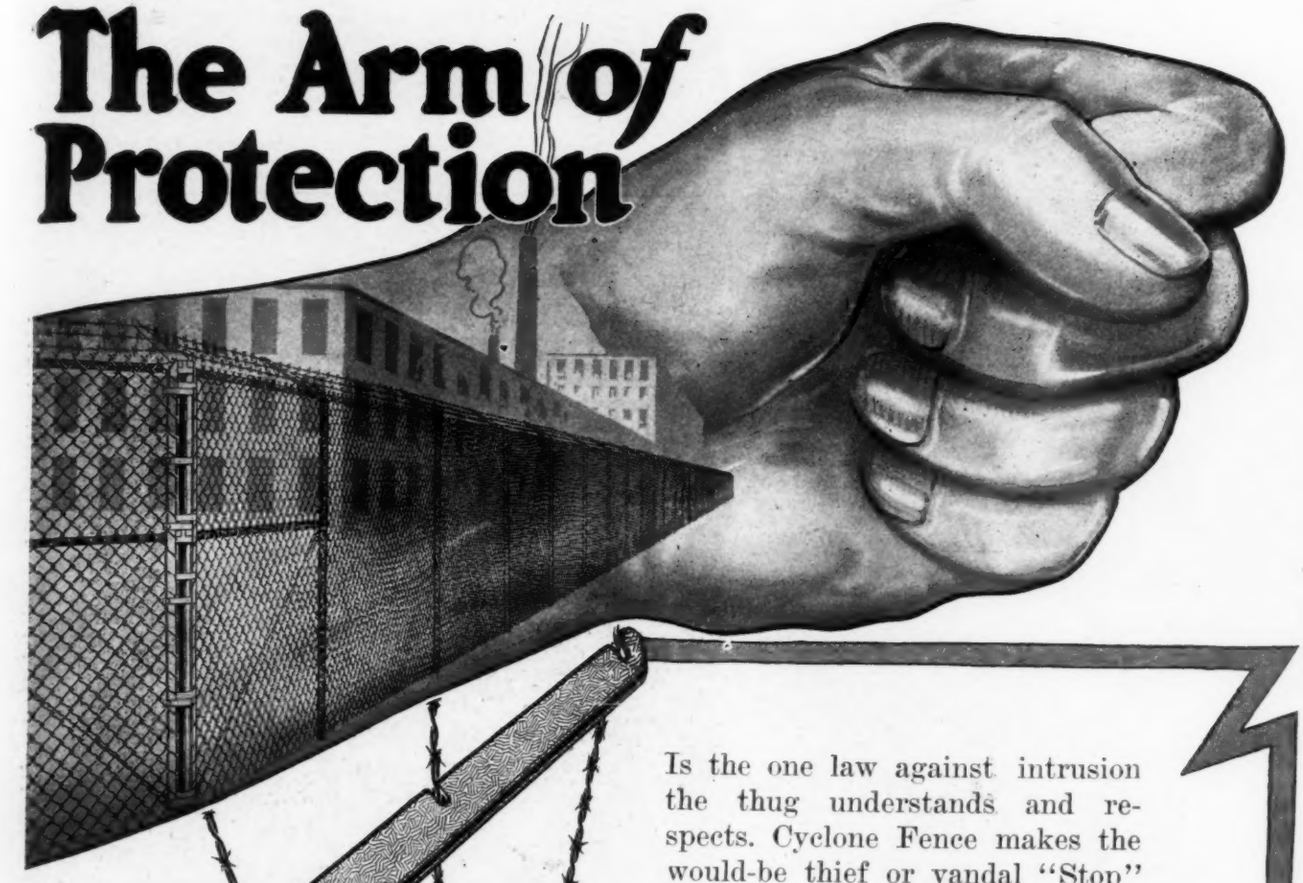
Send for our School and Factory catalogue.

MOTT SOUTHERN COMPANY

PETERS STREET VIADUCT

ATLANTA, GA.

The Arm of Protection



Is the one law against intrusion the thug understands and respects. Cyclone Fence makes the would-be thief or vandal "Stop" at your property line. He respects your ownership.

The "Stop Sign" to all undesirables is

Cyclone

Property Protection Fencing

Use the Cyclone Arm of Protection to guard your property. Cyclone Fencing combines the Quality, Durability and Strength necessary to make industrial property Safe. Stops leaks from theft—reduces watchmen expense—soon pays for itself.

Look for the "Red Tag" on all Fence Fabric. Gates or other wire products you buy. It is a guarantee of superior quality.

The leaders of every industry are users of Cyclone Fencing; their unanimous endorsement is your guarantee of Superior Protection. Ask for free illustrated catalog.

Phone, Wire or Write to Main Offices, Waukegan, Ill. or Branch Offices Nearest You.

CYCLONE FENCE COMPANY

Factories: Waukegan, Ill. Cleveland Ohio

BRANCHES: Chicago Rochester Detroit Philadelphia New York City Portland, Ore. Oakland, Calif. San Francisco

SAVE DAYLIGHT

IMPROVE WORKING CONDITIONS

By painting with

DIXIELITE

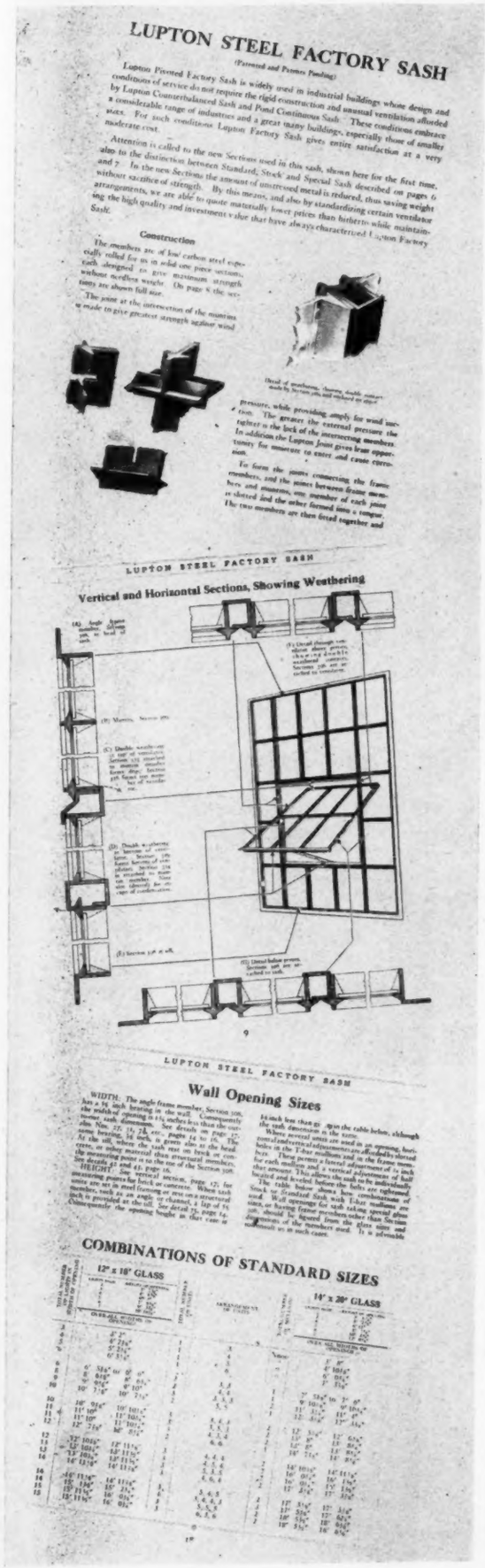
Made especially for walls and ceilings
of factories, mills and large buildings,
in
gloss, semi-gloss and flat finish.

Manufactured only

by

WADSWORTH, HOWLAND & CO., INC.

139-141 FEDERAL STREET
BOSTON, MASS.



LUPTON STEEL FACTORY SASH

(Patented and Patents Pending)

Lupton Pivoted Factory Sash is widely used in industrial buildings whose design and conditions of service do not require the rigid construction and unusual ventilation afforded by Lupton Counterbalanced Sash and Pond Continuous Sash. These conditions embrace a considerable range of industries and a great many buildings, especially those of smaller sizes. For such conditions Lupton Factory Sash gives entire satisfaction at a very moderate cost.

Attention is called to the new Sections used in this sash, shown here for the first time, also to the distinction between Standard, Stock and Special Sash described on pages 6 and 7. In the new Sections the amount of unstressed metal is reduced, thus saving weight without sacrifice of strength. By this means, and also by standardizing certain ventilator arrangements, we are able to quote materially lower prices than hitherto while maintaining the high quality and investment value that have always characterized Lupton Factory Sash.

Construction

The members are of low carbon steel especially rolled for us in solid one piece sections, each designed to give maximum strength without needless weight. On page 8 the sections are shown full size.

The joint at the intersection of the mullions is made to give greatest strength against wind pressure, while providing ample for wind suction. The greater the external pressure the tighter is the lock of the intersecting members. In addition the Lupton Joint gives least opportunity for moisture to enter and cause corrosion.

To form the joints connecting the frame members, and the joints between frame members and mullions, one member of each joint is slotted and the other formed into a tongue. The two members are then fitted together and

LUPTON STEEL FACTORY SASH

Vertical and Horizontal Sections, Showing Weathering

9

LUPTON STEEL FACTORY SASH

Wall Opening Sizes

WIDTH. The angle frame member, Section 308, has a ¾ inch bearing in the wall. Consequently the width of opening is 1½ inches less than the rough sash dimension. See details on page 17, also Nos. 37, 71, 72, etc., pages 14 to 16. The bearing, 34 inch, is given also to the head. At the sill, where the sash rest on brick or concrete, or other material than structural members, See details 42 and 43, page 16.

HEIGHT. See vertical section, page 17, for measuring points for brick or concrete. Where sash members, such as an angle or channel, a lip of ½ inch is provided at the sill. See detail 75, page 14. Correspondingly the opening height in that case is ½ inch less than the table below, although the sash dimension is the same.

Where several units are used in an opening, horizontal and vertical adjustments are afforded by slotted holes in the T-bar mullions and in the frame members. These permit a lateral adjustment of ¼ inch for each mullion and a vertical adjustment of ¼ inch that amount. This allows the sash to be individually located and leveled before the bolts are tightened. The table below shows how combinations of Stock or Standard Sash with T-bar mullions are used. Wall openings for sash taking special glass sizes, or having frame members other than the dimensions of the members used. It is advisable

COMBINATIONS OF STANDARD SIZES

12" x 18" GLASS

14" x 20" GLASS

Improved Details Quantity Production Quick Delivery Lower Prices

These benefits follow the new Lupton policy in Pivoted Factory Sash.

Note the clean sharp lines of the new members. Thousands of these bars, pre-cut for quick assembling, are carried constantly in our factory.

Thousands more, fully assembled into sash of all most-used sizes, await your order in our Philadelphia, Cleveland and Detroit warehouses.

Other details have been improved and simplified also. Yet by our new policy of Quantity Production we are able to quote **lower prices** than heretofore on all sizes carried in stock, whether in bars or fully assembled. You will save time and money by specifying Lupton Stock or Standard Sash.

* * * * *

Get the new Catalogue 10-LSS, and **note changes** in dimensions. It tells how to order Lupton Standard Sash for any opening up to 52 ft. wide.

DAVID LUPTON'S SONS CO.

Amber Street and Allegheny Ave., Philadelphia, Pa.

Makers of modern equipment for daylight and natural ventilation.
Canadian Manufacturers: The A. B. Ormsby Co., Ltd., Toronto

Lupton

INVESTMENT VALUE

The Attractive Mill Village

is an important factor in securing labor.

THE tendency of the times is toward beauty—and it is universal. Formerly it was characteristic of the wealthy. Now it has found its way into the homes of all classes. The attractiveness of the home, its surroundings and the village as a whole, will play an important part in your labor problems of the future.

The interest of the mill demands *lasting qualities* in the construction of homes for its operatives.

Human nature demands *convenience* of arrangement.

Comfort is the inherent right of every human being.

Strictest *economy* at a time of high costs is highly essential in all construction.

All These—Beauty, Durability, Convenience, Comfort, Economy

are the principal features of

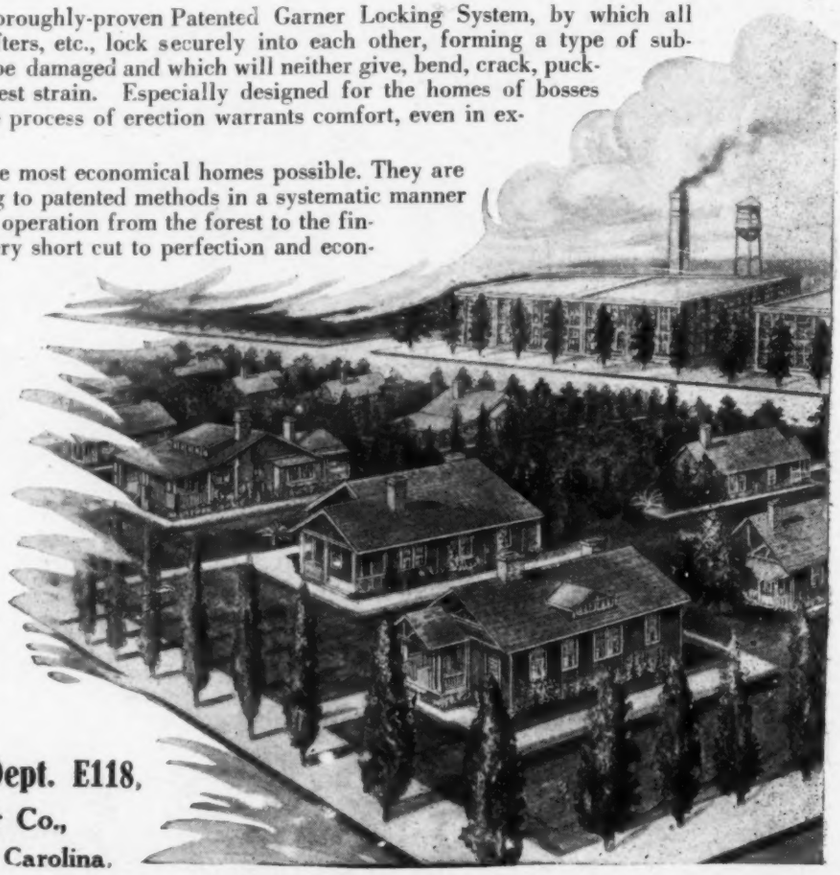
QUICKBILT
BUNGALOWS

Snug, attractive, well-planned, artistic, roomy little bungalows especially designed for attractive, industrial villages.

Built after the practical, thoroughly-proven Patented Garner Locking System, by which all sleepers, joists, panels, plates, rafters, etc., lock securely into each other, forming a type of substantial home that cannot easly be damaged and which will neither give, bend, crack, pucker nor warp, even under the greatest strain. Especially designed for the homes of bosses or operatives. The doubly secure process of erection warrants comfort, even in extremes of hot or cold weather.

QUICKBILT Bungalows are the most economical homes possible. They are made in large quantities according to patented methods in a systematic manner by a plant which covers the entire operation from the forest to the finished house. As a result with every short cut to perfection and economy afforded the cost of manufacture is cut in half and all extra middle-men's profits and commissions are avoided. They are sold direct to you from the forest.

Arriving already built with nothing left but the erection, the labor usually necessary for construction is reduced to a minimum. There will be no piles of waste lumber left. Every waste in material, time, labor and money is avoided.



The Most Logical, Modern, Practical, Economical Method of Home Building.

For fuller explanation address

QUICKBILT Bungalow Dept. E118,
A. C. Tuxbury Lumber Co.,
Charleston, - - South Carolina.

More and Better Light
+ Long Years of Service
+ Greater Production
+ Better Working Conditions =
Pee Gee Factrilite

A Lesson in Paint Economy---

¶ Pee Gee Factrilite, "The Liquid Daylight," has successfully solved the problem of real paint economy.

¶ This "100 Point Mill White" helps to utilize every ray of light that enters your mill, thereby increasing the working hours by daylight and decreasing the use of artificial light.

¶ You want greater efficiency—better working conditions for your employes—greater production—you want a mill white that does not turn yellow and that lasts for years—in short, you want

Pee Gee FACTRILITE LIQUID DAYLIGHT

For Interior Walls and Ceilings of Mills

Pee Gee Factrilite is made by our own perfected process of especially prepared white pigments and long oil, therefore it will not turn yellow like ordinary paints which contain lead and varnish.

It is an economical paint because it is Washable, Durable, Germ and Moisture Proof. Saves the expense of frequent repainting, does not peel or crack and withstands the vibration of heavy machinery.

Pee Gee Factrilite spreads freely and is easily applied on wood, plaster, stone, brick or metal surfaces, having a covering capacity of 450 to 550 square feet per gallon. It is made in gloss enamel or eggshell finish.

We supervise the Job at our Expense.

Write today for Panel finished with Pee Gee Factrilite also for Folder on "Pee Gee Industrial Paints"

PEASLEE-GAULBERT COMPANY, Inc.

Paint Grinders—Varnish Makers **Established 1867** **LOUISVILLE, KY.**

World Cotton Conference

New Orleans

October 13th to 16th

1919

Its Weird cry gets instant Attention

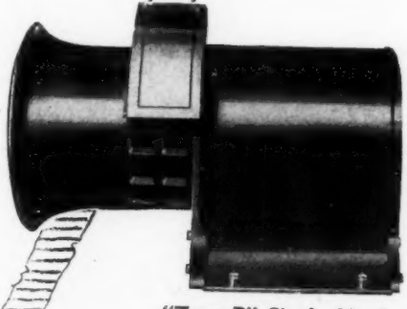
The weird, penetrating screech of the Federal Electric Siren rising from a rumbling groan to a piercing cry, gets instant attention of the men for whom it is intended. Whether used as a fire signal or as a calling signal in the factory or as a "start and stop" signal, it is never confused with any other signal.

It is heard loud and clear above the rumbling and roar of the machinery. Averages only $2.00 a year for electricity to operate—there is no other maintenance expense. Requires no expensive installation equipment—very easy to install as per our simple instructions.

Let us send you complete description and prices of the Federal Electric Siren—the better signal for less money. Mention for what purpose you would want it.

—Send Coupon Today.
—No Obligation.

"Type A" Call Signal.



"Type B" Single Head Call or Fire Signal.

The real work regulator.

"Type B" Double Head Fire Signal.

The FEDERAL Electric Siren

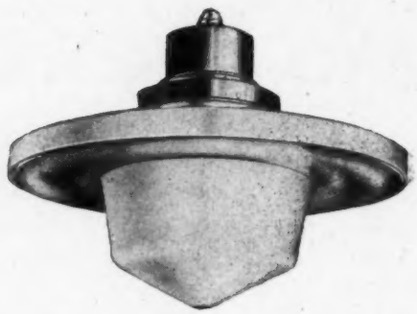
Federal Electric Company, *representing Federal Sign System (Electric)*
Lake and Desplaines Streets, Chicago, Ill.

Please send full information on the Federal Electric Siren (for the Textile Mill)

Name ..... City .....
Street and No. ..... State .....
Company ..... Business .....

(C-9)

Why Give Himself All the Best of It?



The man responsible for the mill's production works under good light. And he should. His time is valuable. He should not tolerate anything that handicaps his own production. At the same time there is every reason why he should be *just exactly as particular* about the light he gives the workers in the mill.

Take the value of the goods they produce, the rental value of the space they occupy, or any other basis of comparison and theirs is the big-money end of the business! A saving of minutes per operator means earning thousands of dollars per year. This is not theory. The effect of lighting upon production has been definitely measured. Let IVANHOE figure out with you the kind of lighting that will produce the best results for *each* of your manufacturing operations, and then show you both what it will *cost* and what it will *pay*.

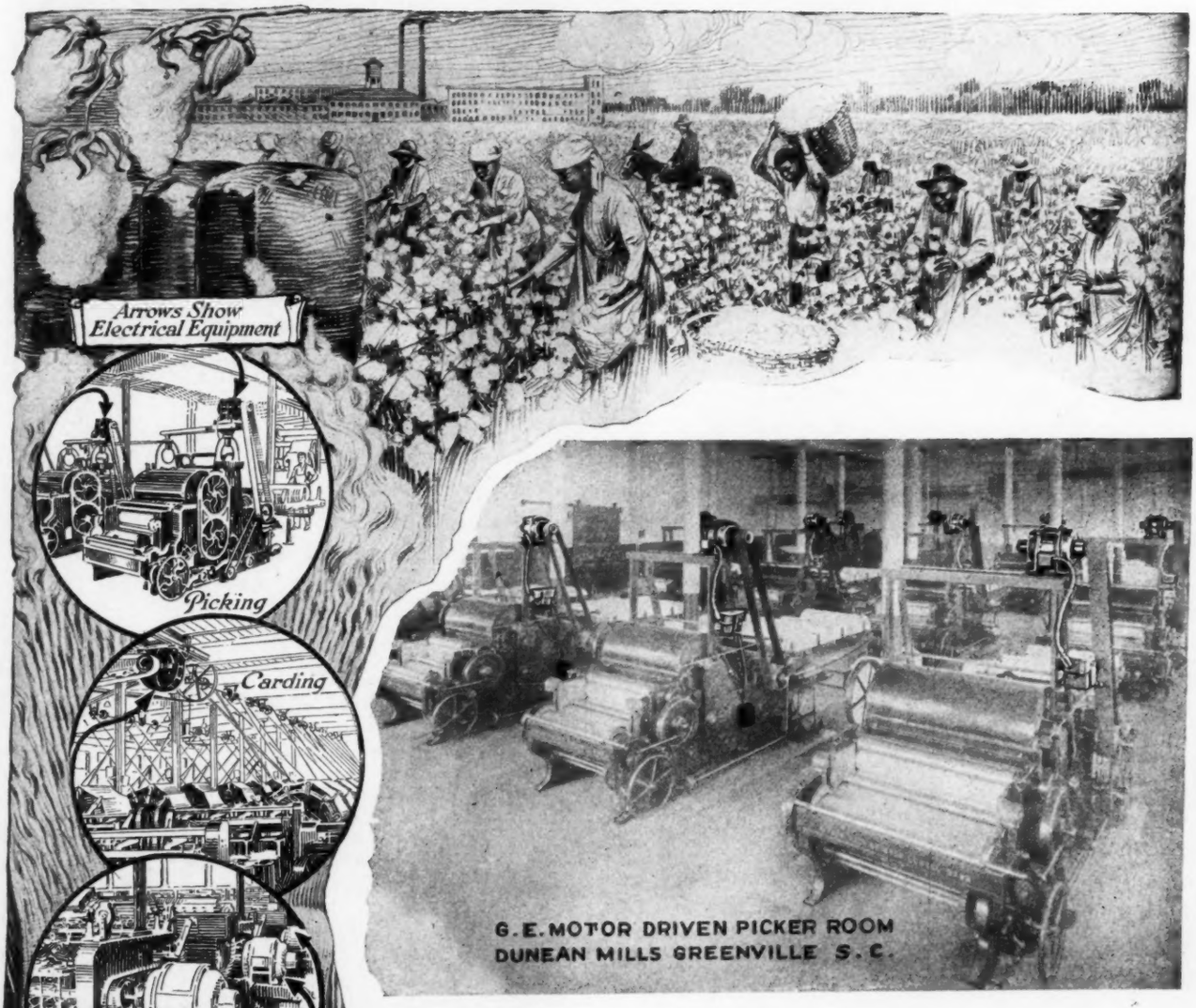
IVANHOE-REGENT WORKS
of General Electric Company
Cleveland, Ohio

"Ivanhoe" Steel Reflectors, Lighting Glassware, Self Adjusting Arms (Anderson Patents), and Illuminating Glassware.

"Service to Lamps"

IVANHOE

SHADES-REFLECTORS



Electric Power Boosts Picker Room Production

Whenever a shaft is turned in the mill, electric power, properly applied by G-E Motors, can be relied upon if most and best product is wanted at least power cost.

For instance, by keeping beater shaft up to full speed at all times, G-E Picker Motors render maximum production possible in the picker room. The direct application of power from these motors cuts out the wasteful friction and speed losses found where other forms of power are used.

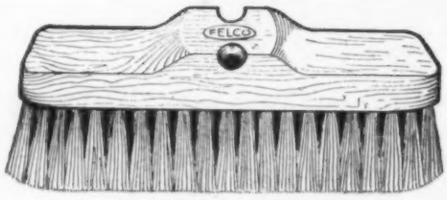
Least power cost is assured by the high efficiency of G-E Picker Motors which transform into mechanical power the greatest practicable amount of the electric power supplied them. The ample metal used and other design features of G-E Motors enable them to get more useful work from the available dynamo capacity in the power plant than is possible with motors having a lower power factor. The mechanical design features of these motors reduce attendance to a minimum.

It will pay you to have our experts show you how picker room production, cleanliness, light and safety can be improved by G-E Motor Drive.

Principal Office: Schenectady, N. Y.
Mill Power Dept. Boston, Mass.

44-9

GENERAL ELECTRIC COMPANY



Straight Floor Sweep

FELCO **FLOOR SWEEPS**

are made to last. Your broom expense will be practically eliminated, for Felco Sweeps outwear a dozen brooms. Made in any width for any purpose.

WRITE FOR PRICES

D. D. Felton Brush Co., Atlanta, Ga.

S. A. Felton & Son Co., Manchester, N. H.

Manufacturers and Repairers of all Kinds of Brushes

Curved Floor Sweep for Spinning Room Alleys

TEXTILE MILL SUPPLY SPECIALISTS

Card Clothing
Roving Cans
Bobbins and Spools
Paper Tubes
Spinning Rings
Ring Travellers
Spindles
Flyers
Mule-spun Weft Carrier for Automatic Looms.
Vitrified Enameled Iron and Porcelain Guides
Wire Goods
Drop Wires
Heddles and Frames, etc. etc.
Metal Stampings
Screw Machine Products
Brass and Bronze Castings and Bushings, etc., etc.
Shuttles of Every Description.

MILL SUPPLY DEPT.,
MR. A. W. ANGELL, MGR.

SHAMBOW SHUTTLE CO.
WOONSOCKET, R. I.

AGASCO PAINTS

Number Nineteen preserves exposed metal surfaces against ravages of the seasons; contains no water, ammonia, or tar acids.

Number Fifteen, penetrative and germicidal, does the same for wood surfaces.

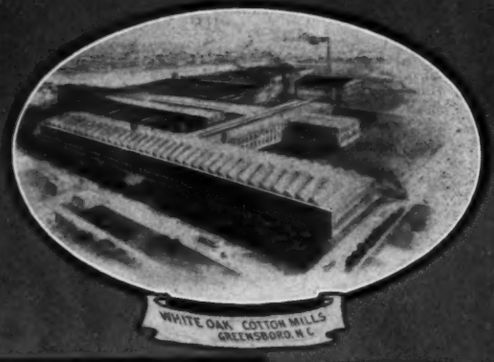
Number Three, Damp Proof, protects foundation walls; seals them against seepage.

Roof Coating Number One for felt, rubber or composition roofing; increases resistance against elements.

AGASCO Creosotes, wood-preservative: Number Seven, dark brown stain; Number Ten, crude; Number Eleven, clear, color to be added by you.

AGASCO ROOFING FELT
AGASCO ROOFING PITCH

ATLANTA GAS LIGHT Co
ROOM 235, 20 FAIRLIE STREET



It Paid This Mill to "PURO-fy"

A constant supply of pure drinking water was not considered an expense, but an investment which would pay dividends in better health of employees, contentment, and the resulting increased efficiency, more production and steadier workmen.

Many other mills have found them a paying investment, and we would like to tell you more details if you will ask for them of the **Pure Sanitary Drinking Fountain Co., Haydenville, Mass.,** or the Southern Agent, Mr. E. S. Player, Masonic Bldg., Greenville, S. C.

PURO SANITARY Drinking Fountain

COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor.

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign, $2.00 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

Member Associated Business Papers, Inc.
Member Audit Bureau of Circulation.
This Issue 5000 Copies.

Volume 83. Number 11.

ONE READER'S VIEW OF ADVERTISING

"There is nothing so aggravating in a mill office as being unable to find the right firm or manufacturer when the supplies are wanted immediately.

"Those fellows that are too stingy to advertise could at least mark their harnesses or reeds, so that one could tell at a glance the name of the firm that did the mending or repairing.

"The above should be a pointer to manufacturers of supplies. It is a small matter to have a sticker on all articles turned out.

"At this writing, by even mail, I am placing an order for reeds. For two hours I looked over all reeds at our mill, and could not find the maker's name. So I looked in COTTON and found the advertisement of a loom harness and reed company. They have our order, which will prove a large one."

The above letter was received from one of our readers in a large cotton mill. We are glad the advertiser in COTTON was in a position to get this order.

THE NEW JERSEY ZINC COMPANY PRAISES BUSINESS PAPERS.

"The Technical or Trade Journal of today is the livest and most up-to-now assistant a business man has. It is carefully edited, well printed, fully illustrated and thoroughly indexed both as to literary matter and advertisements. It is the always ready reference of the minute, and the official, head of a department, or even a workman who does not use it to its fullest capacity, is neglecting one of his best friends.

"In no other way can any business man, no matter how high or low his position, keep so fully abreast of the times in his business as by early and careful perusal of his trade and technical periodical, from its front to its back cover. From no other source can he obtain the immediately useful so well as he can from a well filled and indexed present volume of these same publications."

C. A. STEDMAN,
Advertising Manager.

SAFEGUARD YOUR BUSINESS.

Continued prosperity depends upon two things—the production of more goods and ability to market this increased production at a profit. Labor and capital must both be profitably employed.

Advertising is being used, and will continue to be used in even greater measure, toward the solution of those two problems. That is why business men are interested in the great

ADVERTISING CONVENTION
NEW ORLEANS, SEPT 21-25, 1919.

At this meeting internationally known representatives of the employer and the wage earner will discuss plans for uniting capital and labor for greater production.

Advertising men understand the other fellow's viewpoint. When the right plan is suggested, they will do their part in getting the message to the employer, the worker, the consumer, in a language each understands.

In like manner, this great meeting will be directly helpful in pointing ways toward new and larger markets.

All business men and women are invited to attend and participate. For further information, hotel reservations, etc. write at once to

ASSOCIATED ADVERTISING CLUBS OF THE WORLD
110 West 40th Street,
New York, N. Y.

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This Booklet Shows How to Make Boiler Cleaning Easy

The antiquated method of removing boiler scale with a hammer and chisel is both expensive and time-consuming.

This little booklet shows how scale may be handled in a simple manner. It also shows the increased cost of coal due to scale forming in boilers.

DIXON'S
PIONEER BOILER GRAPHITE

is not a cure-all, but it is the most nearly perfect solution of a troublesome problem.

The formation of scale can rarely be prevented by any treatment, but flake graphite checks it from burning fast to the metal and thus renders a great service at cleaning time.

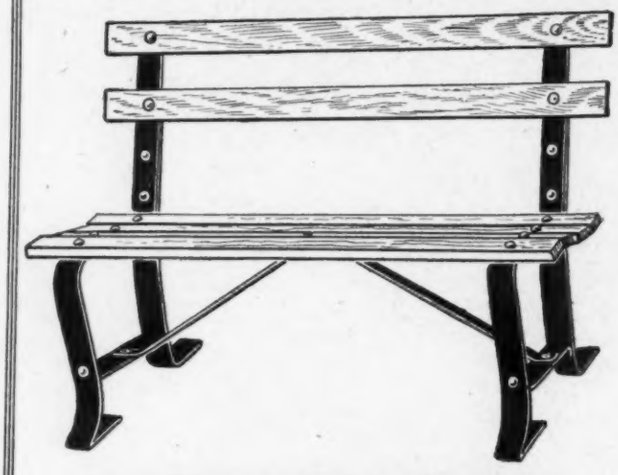
The action of Dixon's Pioneer Boiler Graphite is mechanical, not chemical, absolutely safe and harmless. Its use reduces the expense of cleaning boilers to at least one-half of what it formerly cost.

Write today for your copy of this Booklet No. 34-T, "Graphite for the Boiler."

A sample copy of "GRAPHITE" published monthly in the interest of Dixon's Graphite Products and their uses, will be sent free to those requesting. Ask for No. 34

JOSEPH DIXON CRUCIBLE COMPANY

Established 1827.



SETTEES

AND SWINGS FOR PLAYGROUNDS and PARKS

LOW PRICES **QUICK SHIPMENTS**

We also manufacture Wire and Iron Window Guards, Stall Guards, Hay Racks, Oat Mangers, Etc.

DOW WIRE & IRON WORKS
INCORPORATED
LOUISVILLE, KY.

JORDAN MANUFACTURING CO.

BOBBIN MAKERS

Home Office and Plant No. 1
MONTICELLO, GEORGIA.

GARLAND

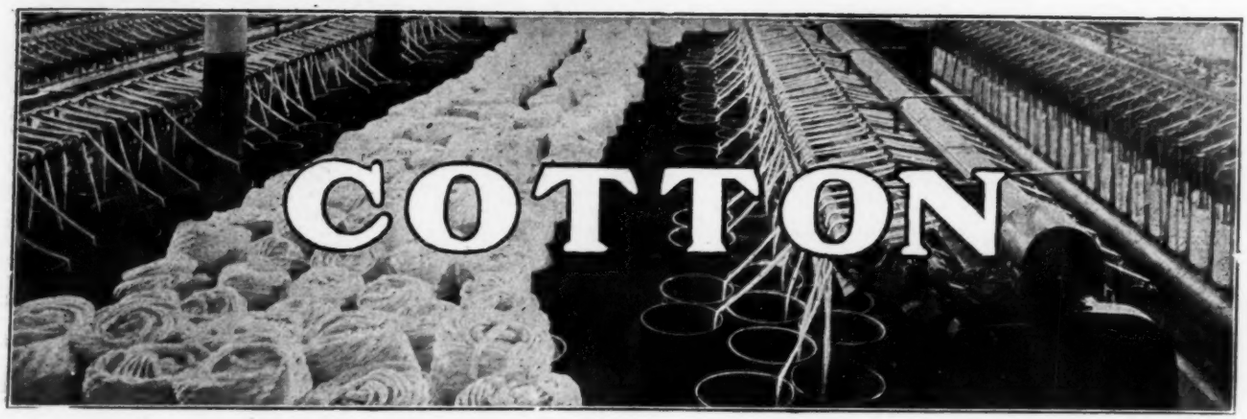
TRADE MARK

This Trade Mark is a Guaranty of

WEAVING AND WEARING QUALITY

We want every user of our loom harnesses to know how well they weave and how long they wear, and for this purpose stamp our trade-mark on the white twine of each harness and label the shaft of each harness with the month in which it is made.

GARLAND MFG. CO.
SACO, MAINE



September, Nineteen-Nineteen:

Wilson at Bat—Congress on Deck.

The heavy artillery is in action. The political atmosphere is reeking with smoke—and gas. The newspaper front pages are black with screaming headlines. The long expected attack on old "High Cost of Living" has begun. Those individuals who have hustled for it have secured their proportionate share of the War Department's food supply at reduced prices. This has been estimated to amount to about one dollar per person if equitably divided.

Press reports from all sections advertise the activities of federal agents in uncovering and libeling hoarded food supplies. These reports are received with satisfaction and applause by many, and in fact, this "good work" on the part of the government is approved by nearly everybody as long as the libeled goods belong to the other fellow. But what a crime it would be if some of our own goods should be thus seized. Nothing less than a breach of our constitutional rights. Peculiar, isn't it, how an individual's viewpoint will change along with the question of ownership?

Webster defines socialism as "a political and economic theory of social organization, the essential feature of which is governmental control of economic activities, to the end that competition shall give way to cooperation and that the opportunities of life and the rewards of labor shall be equitably apportioned." For be it from us to intimate that our federal government is drifting toward socialism. Neither have we any ulterior motive in presenting Webster's definition at this point other than to cause the reader to ponder upon the possibilities which may arise as a result of our present actions.

The main question to decide is whether the furious fusillade from Washington is really going to make a lasting dent in the armor of H. C. L. We doubt it. The attitude of labor must change before any permanent benefit is secured. In every line of production labor is demanding higher pay and shorter work periods. And having secured shorter work periods and higher pay, they decline to work full time and demand more pay. People may rave about high prices, but just as long as the present extravagant ideas of work periods, wages and wasteful living continue, just so long will high, higher and still higher prices persist.

Let us consider a few of these items in detail so that the situation will be perfectly clear, and with the understanding that the examples outlined are recent extensions, additions and results from the radical changes that were brought on by war-time production.

On the railroads the near threat of a nation-wide strike of one and a half million organized employees to compel the continuation of Government management, with its taxing power on the people to refund any deficits caused by the high cost of operation, was recently attempted. The railroad shopmen also demand a 35 per cent increase in wages which will amount to 210 million dollars and if this is allowed, the other railroad employees also want a 35 per cent increase. This would mean adding another billion to the payrolls, which, under government operation, has already gone from 1750 million to 2900 million dollars. Still other demands arise from Cleveland, Ohio, territory.

Street railway employees in Brooklyn, N. Y., are demanding 75 cents per hour and an eight-hour day. In Charlotte, N. C., the demand is for one dollar an hour for similar work. While in Rhode Island a 19-day strike on the street railways has just been concluded on the basis of 56 cents per hour retroactive from June 1st, 1917.

Painters, decorators and paper hangers in New York have struck for a five-day week of 40 hours with a wage of one dollar an hour. Present wages are given as $6 a day for a 44-hour week.

California oil field workers have recently been granted a minimum wage of $5 a day.

One dollar an hour for a 44-hour week is the reported wage of New York clothing makers, and this price is reflected in the cost of clothing today.

The disease is country wide and pertains to no particular class or trade.

But someone has to have money to spend for the products of high-priced labor and that "someone" includes the whole class of labor of which the foregoing are but a few shining examples. It also includes the farmer and his family, yea, even you and I multiplied by millions. The demand is for luxuries—for articles of a quality and kind never before used in such quantities. To illustrate: An Iowa banker says there are enough automobiles owned and operated in that agricultural state to give seats to the entire population of 2,500,000 men, women and children at one time. Across the Missouri river from Iowa lies Nebraska—another farming state. It possesses more motor cars per capita than any other state in the Union.

Sim Beam, president of the Jobbers' Association of Knit Goods Buyers says the day of cheap (low-priced) merchandise is gone. He tells of a small-town retailer from Oklahoma buying ladies' silk hosiery at from twenty to twenty-four dollars a dozen and quotes this retailer as say-

ing his customers would buy similar hosiery in better grades up to thirty-six and forty-eight dollars if they could get it.

A canvass of several hundred women operatives in a Philadelphia hosiery mill showed more than eighty per cent wearing silk hosiery seven days in the week, in spite of the fact that such silks have risen to undreamed-of prices.

Inquiries in a department store in a city of medium size disclosed the fact that average grade silk shirtwaists for ladies varied from $18.98 to $52.48 each. And a few years ago a woman who spent more than five or six dollars each for such garments was considered extravagant. Inquiry also developed that well-to-do farmers' wives were the more numerous purchasers.

We hear little of the farmer as a profiteer and, in fact, farmers and railroads are not included in the Food Control Bill which the President wishes extended. Doubtless it would make little difference if they were.

The American people have got to get back from their fifty-cent cigar war speed to a smoke stogy peace basis not only in the luxuries they consume, but also in the hours they work and the efforts they put into production. The tremendous expenses of the war must be paid and the war-ravaged countries recreated. These things can only be accomplished by steady, patient toil and a reasonable judgment on personal desires and limitations. Such steady productive efforts will reduce the high cost of living slowly, safely, naturally and without injury to anyone. Otherwise the vicious circle will continue until it ultimately causes business depression with its corollary of hard times and forced unemployment.

Which Horn Will They Choose.

Congressman Moon of Tennessee, a member of the House Committee on Post Offices and Post Roads, in a speech which was reprinted in the Congressional Record for July 23rd, seemed greatly disturbed over the deficit of more than 58 million dollars in the operation of the Rural Free Delivery service. He seems to feel very strongly that the postal cost for this service should not determine the postage rate —and he is absolutely right. However, when he considers periodicals, he turns completely around and believes that the postal cost—compiled entirely from hostile guess-work—should, in this case, be used to determine the postage charge.

In this speech he quotes the Hughes report as authority for an estimate as to the present cost of handling second-class mail. The Hughes report was made in 1911 and was based upon figures compiled by the Post Office Department over two years previously—and which figures of postal cost the Hughes report itself stated did not furnish any basis for determining the cost of handling second-class mail. Thus leaving the Hughes report as to cost a matter of virtually pure guess-work. Does he think the current cost of handling second-class mail (in the light of improvements in service, the tremendous use of the freight car—vide Postmaster-General's Report of 1918—etc.) can be determined from reports and estimates of from 9 to 11 years old?

He further compares the postal cost of handling a pound of first-class mail with the postal cost of handling a pound of second-class mail. Is this a comparison that logically can be made and give comparative costs? We think not. The post office reports show that a pound of first-class mail (including letters and postcards) averages approximately 38 pieces to the pound, while a pound of postcards alone will run 170 pieces to the pound. Now a pound of second class mail will average 4.8 pieces per pound—and these are delivered to the post office sacked, routed and needing no sorting or post-marking. A pound of postcards requires 170 different handlings, collecting, sorting, post-marking, routing, sacking, and 170 separate distributions and 170 deliveries to 170 separate addresses.

Can such a proposition in any way be compared to the postal cost of handling 4.8 pieces per pound of second-class mail, with no collections, no initial sorting or distribution and less than 5 addresses at which they must be delivered?

Can a pound of letters involving 38 separate operations at every stage of its progress, from the time it is dropped into the box until its delivery to the 38 separate addresses, be compared in handling cost to a pound of second-class mail with its 4.8 pieces with the preliminary collecting, sorting, post-marking, sacking, routing, etc., entirely eliminated?

These two factors are of very great practical importance in considering the question of postage rates on any class of mail, purely as a practical matter of comparative costs. They do not in any way involve the fundamental postal principles, which should properly underlie all postal legislation. It is undoubtedly a dangerous precedent for Congress to establish the postal principle that the cost of the postal service must determine the postage rate. In his speech the congressman recognizes the very great danger of establishing the principle that postal cost must determine the postage rate when he considers as he did, the vitally important function of the Rural Free Delivery service—perhaps the most important postal function in the department and which would fall under the vicious postal-cost principle.

Either there is such a thing as fundamental postal principles or there is not. If there is, postal legislation cannot adhere to it in one instance and ignore it in the next.

Senator Arthur Capper of Kansas declares that there is no subject of greater importance to the public than that involved in the postal principles on which is based our postal legislation. The present postal zone law needs careful consideration. Cheap postage on periodicals has made America a nation of readers beyond any nation in the world. If this is not at once conceded a national benefit, it is only necessary to compare this country with its splendid American idealism, its singleness of purpose and the universality of its achievements with those nations of the world in which there is but little magazine reading.

At one time this country had a postal zone system applying to letters, newspapers and periodicals. This was completely abolished in 1863 because it was regarded as an unsound postal policy, and un-American that a citizen or home should have to pay more postage because it was accidentally situated at a greater distance from the point of mailing. The postal service is an American service from all Americans to all Americans on a basis of equal postage and equal service. That is sound Americanism.

Country newspapers are now allowed circulation in the county of publication free of any postal charge whatever and this can only be justified and continued on an American theory that the postal service is an equal service to all

American business offices and homes. We cannot afford to abolish postal service, or increase postage rates to a prohibitive basis, on the theory that cost of service shall determine the postage rates. Such a postal service pays too high a return in improved and elevated citizenship.

Every reader should give this postal zone matter and its revival of unsound postal theories, long ago discredited, very serious thought. Requests should be made to the congressman from each reader's district urging the abolition of the zone system and the adoption of the real American method of equal postage and equal service to all.

Germany's Textile Shortage.

That Germany's war experience included a continuous industrial fight against a shortage of textile materials becomes increasingly evident as more complete reports find their way to American shores. Wood pulp, nettle fiber and even potato vines were included in the extensive experiments to find suitable substitutes for the raw materials which were cut off by war conditions.

More than two hundred factories were grouped under The Textile Union, Ltd., and produced "natron cellulose" for the manufacture of paper and yarn for textile purposes. Two other groups were combined to form the Natron Cellulose and Paper Factories, Ltd. Yarn from a sulphite cellulose was also made by the German Paper Yarn Co., Ltd., while a union of Rhenish-Westphalian paper yarn spinning mills were engaged in the distribution of serviceable spinning papers and cutting machines for the manufacture of paper yarn. It was estimated that the production of such yarn would reach 10,000 tons for the current year. This fiber was used as a substitute for wool and was, at times, prepared with a small admixture of wool.

The so-called "typha" fiber was discovered by Professor Horing, and there was established under his direction the Typha Utilization Co., embracing a number of Saxon factories. This material was said to be suitable for the manufacture of felt, cord, laces, tapes, sacks, underclothing and hosiery.

The utilization of common broom, long known and in the past used to some extent in France, was begun anew in Germany during the war and an annual production of around a thousand tons of broom fiber reached. This material was used in textiles and basket making.

Much interest was shown in the development of nettle fiber as a substitute for cotton. For the utilization of the wild nettle fiber and the cultivation of new nettle species, two companies were founded known as Die Nesselfaser-Verwertungs Gessellschaft, Ltd., and Die Nesselanbau-Gessellschaft. These companies had a combined capitalization of fifteen million marks and included among their stockholders many of the most prominent German textile companies. There was also formed in Bavaria the Bavarian Nettle Fiber Co. Under the auspices of these companies the production of nettle fiber reached several thousand tons annually.

During the war the cultivation of flax was also greatly extended.

Prior to the war practically all the hemp used was imported and only a comparatively small amount has been produced since the beginning of hostilities.

Attempts to utilize peat fiber were taken up during the war and some success obtained by the Torfaser-Verwertungs-Gessellschaft, Ltd. This fiber was mixed with shoddy yarn in order to render it more serviceable.

Experiments were also made with hop fiber and the fibers of the potato plant with little success.

In another part of this number of COTTON, R. E. Lofton shows the results of the research work of the Bureau of Standards at Washington with a number of samples of German textile substitutes procured through the Department of Commerce.

And It's Going Up.

The typical American family spends from three to five per cent of the annual family income for medical service, states Lee K. Frankel, vice-president of the Metropolitan Life Insurance Company.

In a group of 251 laundresses among the policy holders of the insurance company it has been learned that the average expenditure for medical and general care amounted to 5.1 per cent of their aggregate earnings. When the amount of their income is considered, this ranging from $350 to to $500 a year, the disproportionate expenditure for sickness and medical care is apparent.

In groups of families having larger incomes the proportion is small. However, the average is not the average, but only an arbitrary figure, declares Mr. Frankel, since only a limited few of the families in a group pay any considerable amount for sickness and medical care, while many families do without.

In an article on "Sickness Costs and the Family Budget," written by Mr. Frankel for the July issue of Modern Medicine, Chicago, Ill., he shows that medical care in the $900 income-group costs an average of $23.18 among many Philadelphia families. Nearly five times that amount is expended by families having incomes larger than $1,500.

His article is written to show that the cost of medical care is out of reach for many families and that the utility of medical knowledge and the medical practitioner's skill is limited because of an extravagant and poor system of medical care. As an example of the small limits within which medical care is accessible to the majority of American families, Mr. Frankel shows that nursing service in the homes of self-sustaining workmen is exceedingly limited. The working man's wage will not pay the cost of a private duty nurse, while self respect and pride forbid his seeking assistance from a charitable agency. Mr. Frankel believes that bedside nursing service should be made self-supporting and brought within reach of all families of a community.

Strikes.

Strikes are becoming so popular a pastime these days that it might be well to consider exactly what a strike is, and what it accomplishes, from the purely economic viewpoint.

The purpose of a strike is, it may fairly be said, to extract by force higher wages or greater concessions from the employer by temporarily crippling the business. A necessary consequence of a strike is the prevention of other non-striking workmen from taking the strikers' places. Such a step is clearly illegal, however, for it is fundamental in

society that every human being must pay for the bread he eats by his present or past labors, and the prevention of workmen engaging in a given business by a monopolist class of workers, is clearly against all laws of political freedom and economic progress.

The test of a principle, however, is the extent to which it can be applied. Suppose our manufacturers, and doctors, and teachers, and lawyers organized and struck. The result upon the country would make the current railroad strike seem a flea bite instead of a disease.

Strikes must ultimately be paid for by the strikers. At present only the unions strike, and their gains may have been out of proportion to their losses. But let the strike habit, popularized by the unions, extend further, and the successful striker of one week will have to pay out his increased wages as tribute to some other successful striker of the next week. Such a situation will resemble Byron's description of Murray's tragedy, "All stab, and everybody dies."

Knowledge is expensive. The American public has just paid a billion dollars, or thereabouts, to learn that the government cannot run the railroads. It is to be hoped that it will not take another billion to prove that the "universal strike" wouldn't pay for itself. In reality, the strikers would have to pay the bill for this bit of knowledge themselves.—*The Street.*

Blocking the Coal Shortage.

While some members of the cotton industry of the South are experimenting with new ideas in the management of their mills, the New England branch of the business is concerned with fuel problems and also making some changes. The substitution of oil for coal, at least as a temporary measure, is absorbing attention and more than one mill is adopting the expedient. The plan is being watched by the rest of the manufacturers in the big centers of cotton production, for a criterion of success which the plan will attain.

Equipment for burning oil instead of coal is being installed in the plant of the French River Textile Manufacturing Company, at Mechaniesville, Conn., and the new method of developing power soon will have a trial there. This will be the first trial of the fuel in the vicinity and will be watched with interest among manufacturers in general in eastern Connecticut, as the fuel problem in recent years has been one of the greatest faced by the industries of the district, which is saying considerable in view of the difficulties which have harassed production.

Another New England mill which will soon have the new system in operation is the Charlton of Fall River, Mass., the big center of print cloth production. The Charlton concern has taken the lead in this particular, but a second project is also under way in Fall River, the King Philip management having determined upon a similar installation and ordered equipment. The oil will be sprayed under the boilers in much the same way as used in some of the American battleships. It is said of the French River concern's experiment that a saving of about 400 tons of coal a month and several thousands of dollars a year will be made.

In Fall River, the mill men have under consideration this scheme for eliminating the coal question and at the same time saving considerable expense for labor since the experience of the United States Navy and of various large manufacturing plants in other industries have apparently placed the project far beyond the experimental stage. The advocates of fuel oil claim that there is an actual saving in the cost of the same and the elimination of a large force of firemen and coal shovelers. The experience of the coal shortage two years ago and the danger of its repetition next year set both Fall River and New Bedford cotton manufacturers to investigating seriously the possible methods of developing power by other means.

In New Bedford, the manufacturers are leaning in the majority of cases toward electrification of their plants, with the removal of their entire engine and boiler systems and the purchase of sufficient power to drive their machinery. This is believed by most mill engineers to be the logical solution of power difficulties, but many mills have hesitated to make the change at present because of the heavy expense involved and the reluctance to scrap boilers and engines which have not outlived their usefulness—in some cases having been purchased within a comparatively short time.

Concerning this point, even a temporary use of oil seems economical as it is claimed that practically all of the present power plant equipment can be utilized with a few simple and inexpensive changes in the substitute system. It is necessary to install oil sprayers beneath each boiler and to have a pumping system for forcing the liquid upon the fire. The feed can be controlled largely by automatic machinery and it is possible to eliminate the entire fire room gang except one or two attendants to see that the machinery functions properly. Thus manufacturers can get the full period of usefulness from their equipment and have a longer time to prepare for the expense of electrification.

One incidental expense necessary is the installation of storage room for a fairly large quantity of fuel oil and the maintenance of a supply, for which tanks must be set up. Large iron tanks are used for this purpose and the Charlton company will have two of these with a capacity of 23,000 gallons each. These are 40 feet long and 10 feet in diameter. The concern bought these in Providence, R. I., from the Rhode Island Boiler Works. The problem of moving them to Fall River when completed was somewhat staggering, as they weigh ten tons each.

This was accomplished by the use of a five-ton automobile truck and a trailer for each tank. They were loaded and taken over the road from Providence to the Fall River plant, however, then set up without mishap. The fact that the Rhode Island Boiler Works had under construction recently no less than twenty of these tanks gives some idea of the extent of the movement for substituting fuel oil for coal in recent months.

Another indication of the progress of the movement, likewise the expectations of the oil companies, is that these producers are making plans to have eventually large terminals in Fall River, with facilities for storing large quantities. Until these terminals are completed, however, it is planned to truck the oil over the road from Providence, where very large quantities of the fuel already are available, or from similar stations in Massachusetts where storage plants exist.

The Williamson Products Company, dealers in linters, cotton and cotton waste, has been opened by J. J. Williamson. The headquarters of this new firm will be at 35 Ivy Street, Atlanta, Ga., and the company will be under the management of E. F. Lindewirth.

PRACTICAL COST ACCOUNTING

A System for the Small Mill

By An Accountant

The stress of modern business and the keenness of competition make necessary the efficient and accurate cost accounting of every article produced by a cotton manufacturer.

The cotton trade has a peculiarity that few other trades have, that is, the setting of selling prices before the goods are manufactured. If a man is running a cloth mill and receives an order for a certain amount of cloth, he must, first of all, find out what his warp and filling yarns will cost, or if he only buys his filling, he must find the cost of that. He goes to the yarn manufacturer and asks for quotations on the counts of yarn he wants. This man must give him a price that will allow him a reasonable profit and yet meet the competition of other manufacturers. In the same manner a cloth manufacturer is able by his cost accounts to give a reasonable and intelligent price on his manufactures.

The cost account is an open book in competition and shows definitely whether or not a manufacturer can profitably compete with another. Oftentimes prices are quoted by a manufacturer who has some peculiar advantage in manufacture and who can undersell his less favored rival, or perhaps the price is set by a man who thinks he is making a profit but in reality is losing money on the deal.

Cost accounts are very useful in determining the advisability of introducing a new process, or substituting old machinery with new. Cost accounts also furnish a convenient method of checking up the efficiency of each department. As soon as the cost of a product increases, the cost sheets will show just which room causes the increase, and an investigation will show the reason. It may be that the increase is unavoidable, but if it is not it can be corrected before the mill sustains an appreciable loss. It may be that one department is making slight losses consistently while another is making enough profit to offset the losses. The proper subdivision of accounts shows definitely what each department is doing and gives an incentive for the foreman to reduce his costs.

For every pound of yarn produced, or every yard of cloth or pound of cloth produced, there must be five individual costs which will, collectively, make the total cost. They are, (1) the cost of cotton; (2) the wages of the operatives employed in the manufacture of the product; (3) the expense of operating the factory, such as repairs, power, light, heat, etc.; (4) the expenses outside of the factory, such as taxes, advertising, freight, etc.; (5) the interest on the investment.

There is usually no difficulty in properly distributing the first and second costs. The material actually used and the wages of the laborers directly employed in manufacture are obviously a part of the cost of the product. The first point of difficulty comes when we attempt to distribute the indirect factory costs among the various counts of yarn produced. There are various methods of making this distribution, but for the sake of simplicity we will consider but one.

There are several features of cost systems, which have to be solved by each accountant as he believes satisfactory. Take, for instance, the case of patterns. There is a general question as to how far the costs of designing and making patterns should be charged to expense and how far the patterns should be considered an asset. Then if we decide a certain amount is really an expense, should we charge it to the cost of the article we are to eventually produce from it, or consider it as a general expense of the factory?

Two points of uncertainty arise in regard to the best system of cost accounting. The first is whether the information acquired is worth the expense of acquiring it. By this statement I mean that an elaborate system, where a lot of clerks will be required to maintain it, should not be used in a small mill. I know mills where each machine has a counter on it. In this case the superintendent knows what every machine is doing, but it requires 30 or 40 clerks to tabulate all the jumble of figures, and when they get through they have nothing as valuable as they should have for the labor expended. The second point of doubt is as to the degree of accuracy which may be obtained and the danger which arises from treating as actual what is merely hypothetical. It is true of the best systems that the detailed apportionments of expenses, among the different processes, is to some extent a matter of estimate.

Now, before we start our detail work, let us consider accuracy. We have all seen bookkeepers and cashiers working overtime to balance their cash accounts to the last cent, but how often do we see a clerk working overtime to balance his accounts of valuable materials used and finished goods produced? The first requisite is, therefore, a most careful accounting for the materials used, as well as for the cash in the drawer, an accuracy regard-

ing the amount of material used not dissimilar to that required in regard to wages paid.

Keeping in mind the first defect we found in cost accounting, that is, whether or not the information acquired is worth the expense of acquiring it, we will consider a cost system for a small mill. Their production for six months is, we will presume, about as follows:

Yarn made and sold:

25s W Chain	282,609 lbs.
30/2 Skein	104,348 lbs.
36s Skein	43,478 lbs.
28/2 Skein	152,174 lbs.
25s Skein	330,435 lbs.
25/2 Chain	130,435 lbs.
10/2 Chain	26,087 lbs.
Print cloth 64 x 64	200,000 lbs.
Total	1,269,566 lbs.

We will further assume that the material and labor costs subdivide as follows:

Cotton $125,661 less the value of waste sold which was $5,304.

Labor.

Carding	$10,157
Spinning	11,426
Spooling	3,937
Warping	893
Twisting	2,809
Reeling	2,565
Dressing	600
Weaving	6,286
Packing room	1,587
Repairs	2,609
Power	1,609
Yard	1,457
Total labor	$45,935

First, we will ascertain what processes and expenses are common to all varieties of the product, such as carding, spinning, repairs, insurance, etc.

Second, separate the processes and expenses undergone only by portions of the product, such as reeling for the skein yarn or sizing materials for cloth, and find how many pounds have been submitted to each special cost.

Third, ascertain the average number of the mill product submitted to each special cost.

Fourth, divide the sum total of the costs in common, by the total pounds produced. This is the cost per pound in common, of the average number. This cost per average number is thus distributed over the whole product; each kind of product bearing the cost per pound in proportion to the number of the yarn. The special costs are divided in the same manner, over the kinds of product they affect, through the medium of the average number of the products affected.

COST COMMON TO ALL THE PRODUCT.

Labor, Carding		$10,157
Labor, Spinning		11,426
Labor, Packing Room	$1,587	
Supplies, Packing Room	543	2,130
Labor, Repairs 94%	2,452	
Supplies, Repairs 94%	6,367	8,819
Labor, Yard		1,457
Labor, Power 96%	1,545	
Supplies, Power 96%	6,135	7,680
Insurance and Taxes		2,435
Interest		2,609
Salaries and office expense		2,522
Expense account		848
		$50,083

The total cost, part of which belongs on all the product is $50,083 ÷ 1,269,566 = 3.9449 cents per pound. We must now find the average number.

No. 10s		26,087 × 10 =	260,870
No. 25s Warp	282,609		
No. 25s Skein	330,435		
No. 25s/2 Chain	130,435	743,479 × 25 =	18,586,975
No. 28/2 Skein	152,174		
No. 28s Cloth W	112,000	264,174 × 28 =	7,396,672
No. 20/2 Skein		104,348 × 30 =	3,130,440
No. 36s Skein	43,478		
No. 36s Cloth F	88,000	131,478 × 36 =	4,733,208
		1,269,566	34,108,165

34,108,165 ÷ 1,269,566 = 26.945 as the average number.

Then the ratio 26.945 is to 3.9449 as 1 is to X = .1464 per pound of No. 1s yarn. If No. 1s cost .1464 then the other yarns will cost, respectively,

10s × .1464 = 1.464 cents
25s × .1464 = 3.660 cents
28s × .1464 = 4.099 cents
30s × .1464 = 4.392 cents
36s × .1464 = 5.270 cents

Having found the general costs, we must next ascertain the special costs of each number.

Yarn	Spooling	$3,937
	Warping	893
	Twisting	2,809
	Reeling	2,565
		$10,204
Cloth	Dressing	$ 600
	Weaving	6,286
	Repairs, weaving labor 6%	157
	Repairs, weaving supplies 6%	407
	Power, weaving, labor 4%	64
	Power, weaving, supplies 4%	257
	Sizing materials	440
		$8,211

	Spooling	Warping	Twisting	Reeling
10/2 Skein as 10/1	26,087			
as 10/2			26,087	26,087
25s Warp Chain	282,609	282,609		
25/2 Chain as 25/1	130,435			
as 25/2	130,435	130,435	130,435	
25s Skein				330,435
28/2 Skein as 28/1	152,174			
28/2 Skein as 28/2			152,174	152,174
28s Cloth Warp	112,000	112,000		
30/2 Skein as 30/1	104,348			
as 30/2			104,348	104,348
36s Skein				43,478
	938,088	525,044	413,044	656,522

We now find the average number of yarn spooled.

No. 10s		26,087×10 =	260,870
No. 25s Warp Chain	282,609		
No. 25s Chain as 25/1	130,435	413,044×25 =	10,326,100
No. 25/2 " " 25/1		130,435×12½=	1,630,437½
No. 28/2 Skein " 28/1	152,174		
No. 28 Cloth Warp	112,000	264,174×28 =	7,396,872
No. 30/2Skein as 30/1		104,348×30 =	3,130,440
		938,088	22,744,719½

Then 22,744,719½ ÷ 938,088 = 24.246 as the average number. The total cost of spooling is $3,937, and the pounds produced are 938,088, therefore, $3,937 ÷ 938,088 = .004197 cost per pound.

Then the ratio 24.246 is to .4197 as 1 is to X = .0173 cost of the No. 1s yarn. Then the respective costs will be, multiplying as before:

No. 10s	.1731
No. 25s	.4327
No. 25/2	.2163
No. 28s	.4846
No. 30s	.5192

Proceeding in a like manner with the warping, we have:

No. 25s W Chain	282,609×25 =	7,065,225
No. 25/2 Chain	130,435×12½=	1,630,437½
No. 28 Cloth Warp	112,000×28 =	3,136,000
	525,044	11,831,662½

Then 11,831,662½ = 22.535 as the average number. Cost of warping $893, so $893 ÷ 525,044 = .001701 cost per pound. Again the ratio 22.535 is to .1701 as 1 is to X = .00755 cost of No. 1 per pound and multiplying as before the costs will be:

No. 25s yarn	.1886
No. 25/2 yarn	.0943
No. 28s yarn	.2112

	10/2 Skeins
Cotton	10.000
Less Waste Value	.418
	9.582
Costs common to all	1.464
Spooling	.173
Spooling Twisted Yarn	.....
Warping	.....
Twisting	.257
Reeling	.094
Dressing and Print Cloth	
	11.570
Freight	
Commissions	
Full cost of product	

We will now find the cost per pound for twisting in the same manner.

No. 10/2 Skein	26,087× 5 =	130,435
No. 25/2 Chain	130,435×12½=	1,630,437½
No. 28/2 Skein	152,174×14 =	2,130,436
No. 30/2 Skein	104,348×15 =	1,565,220
	413,044	5,456,528½

Then 5,456,528½ ÷ 413,044 = 13.21 as the average number. Cost of twisting is $2,809, so $2,809 ÷ 413,044 = .00680 cost per pound using the ratio 13.21 is to .68 as 1 is to X = .05148 cost per pound of No. 1s yarn.

Then the respective costs will be,

No. 10/2	.2573
No. 25/2	.6434
No. 28/2	.7206
No. 30/2	.7720

In a similar manner we find the cost per pound for reeling,

No. 10/2 Skein	26,087 × 5 =	130,435
No. 28/2 Skein	152,174 × 14 =	2,130,436
No. 30/2 Skein	104,348 × 15 =	1,565,220
No. 25s Skein	330,435 × 25 =	8,260,875
No. 36s Skein	43,478 × 36 =	1,565,208
	656,522	13,652,174

Then 13,652,174 ÷ 656,522 = 20.795 for the average number. The cost of reeling is $2,565, so $2,565 ÷ 656,522 = .00391 cost per pound, and with the ratio 20.795 is to .391 as 1: X = .0188 cost per pound of No. 1s yarn. Then the respective costs will be,

No. 10/2	.0940
No. 28/2	.2632
No. 30/2	.2820
No. 25s	.4700
No. 36s	.6768

We find from the production table that there were 200,000 pounds of print cloth made and that it cost $8,211, so $8,211 ÷ 200,000 = .041055 as the cost per pound.

The waste sold for $5,304, so we must credit this to the cost of the raw cotton. $5,304 ÷ 1,269,566 = .004178 per pound to be credited.

Supposing our cotton costs us 10 cents a pound, we now have all the costs figured and it is only necessary to combine them to get the finished cost of the product.

25s Skeins	25s Chains	25/2 Chains	28/2 Skeins	30/2 Skeins	36s Skeins	Print Cl. 56% Warp 44% Fill
10.000	10.000	10.000	10.000	10.000	10.000	10.000
.418	.418	.418	.418	.418	.418	.418
9.582	9.582	9.582	9.582	9.582	9.582	9.582
3.660	3.660	3.660	4.099	4.392	5.270	2.295W
						2.319F
.....	.433	.433	.485	.519	.....	.272
.....	.....	.216	.....	.....	.....	.....
.....	.189	.094	.....	.....	.....	.118
.....	.....	.643	.721	.772	.....	.....
.470	.....	.....	.263	.282	.677	.....
						4.105
13.712	13.864	14.628	15.150	15.547	15.529	18.691

The costs per pound for freight and commissions are added to the manufacturing costs to give the total cost.

The figures used in the summary are all obtained from the various individual cost sheets, except the costs on the cloth. In this case 56% of all the warp costs must be used and 44% of all the filling costs, because this is the percentage of the yarns used to make the cloth.

This system of cost keeping is only efficient for a small mill where the bookkeeper has to keep the account, and so cannot go into detail. As can be readily seen, the man who uses this system is distributing his carding, packing,

(*Continued on page* 702.)

The World Cotton Conference.

Looking to the effective conduct of the World Cotton Conference, to be held at New Orleans, October 13 to 16, the Executive Committee having in charge the general arrangements, in session at Washington on August 1, approved the following preliminary program:

I. Delegates to the Conference shall register by business interests, under the following classes:

(1) Growers
(2) Ginners
(3) Seed Crushers and Manufacturers of Seed Products.
(4) Compressers.
(5) Cotton Merchants.
(6) Transportation and Insurance.
(7) Banking.
(8) Governments and Economics.
(9) Spinners and Manufacturers—American.
(10) Spinners and Manufacturers—Foreign.
(11) Textile Merchants, Converters and Finishers.

II. Delegates representing interests not especially named in the above list may register under any class, as preferred.

III. The Chairman and Secretary, consulting with the other members of the Executive Committee, shall name a temporary chairman for each one of the eleven classes.

IV. At ten o'clock in the morning of the first day of the Conference, each class shall meet at some delegated place, choose its permanent chairman and secretary, and take such other action as it may deem fit.

V. Approximately twelve hundred seats on the main floor of the hall in which the general sessions of the Conference are to be held shall be equitably apportioned among the eleven classes composing the Conference, and these seats shall be distributed at the earliest practicable moment to the permanent chairman of each class.

VI. The Executive Committee shall recommend to the Conference that at its first session the permanent chairmen of the eleven classes of business interests composing the convention be appointed a Committee on Nominations and Rules.

VII. The Executive Committee shall recommend that the Committee on Nominations and Rules, when appointed, embody the following provisions in its report:

(1) In votes on resolutions, one vote shall be recorded for each class of delegates, and only votes that receive the support of the eleven classes shall be considered as the official action of the Conference. A majority vote in each class shall control its vote, but in recording the vote of each class its chairman shall state the percentage of ayes and nays.

(2) Program addresses to be limited to fifteen minutes.

(3) Ten minutes shall be allotted to each speaker in general discussions, unless extended by majority vote of the meeting. No one to speak twice on any subject without unanimous consent.

(4) All speeches shall be confined to the subject under discussion.

VIII. The Executive Committee shall also recommend to the Committee on Nominations and Rules, when appointed, that it nominate for permanent officers of the Conference, one President, five Vice Presidents, an Executive Secretary, a Recording Secretary, three Assistant Secretaries, and such other officers as it may seem fitting to nominate.

IX. The Chairman and Secretary of the Executive Committee, in consultation with its other members, are given authority to arrange the sessions of the Conference on the following general plan:

(1) An opening session devoted to addresses of welcome and responses, and to preliminary organization.

(2) A general session devoted to the discussion of Future World requirements and Production.

(3) A general session devoted to the Growing and Handling of Cotton.

(4) A general session devoted to the Storage, Insurance and Transportation of Cotton.

(5) A general session devoted to the Buying and Selling of Cotton.

(6) A general session devoted to Statistics and World Problems of the Cotton Industry.

(7) Two general sessions devoted to reports of group meetings and resolutions recommended by the several committees of the Conference.

X. The Chairman and Secretary of the Executive Committee, in consultation with its other members, are given authority to select Joint Chairmen, and, as far as practicable, the members of the following committees, which, in each instance, shall hold hearings and report its conclusions to the Resolutions Committee.

(1) Committee on World's Requirements and Stabilizing Production and Prices.

(2) Committee on Growing of Cotton, Seed Selection, Methods of Cultivation and Picking.

(3) Committee on Ginning, Uniform Baling and Compressing.

(4) Committee on Warehousing and Country Damage.

(5) Committee on Transportation and Insurance.

(6) Committee on Buying and Selling, Equitable Tare and Net Weight.

(7) Committee on Exchanges, Classification, Contracts and Purchases.

(8) Committee on Financing, Foreign Credits and Exports.

(9) Committee on Research, Reports and Statistics —international and domestic.

(10) Committee on Permanent Organization.

XI. Resolutions from the group meetings and all other resolutions shall be submitted to a Resolutions Committee, composed of the Chairman of the eleven classes of business interests composing the conference and the chairman of the eleven committees; the members of the Resolutions Committee to select their own chairman.

XII. The Chairman and Secretary of the Executive Committee, cooperating with the officers and members of the Local Committee, shall have authority to arrange meeting places for the Conference, for the various classes into which its membership to be divided, and for its several committees.

XIII. The Chairman of the Executive Committee shall have authority to appoint a sub-committee, the chairman and members of which shall cooperate with the Local Committee in arranging the details of the banquet or banquets which are to conclude the Conference.

German Substitutes for Wool and Cotton

BY R. E. LOFTON. *

Immediately following the outbreak of the world war Germany's great fleet of cargo carriers was driven from the seas, and that vast volume of raw materials, upon which her industries and commerce were largely dependent, ceased to flow to her shores. It was only a short time, of course, until the cutting off of the imports of these raw materials began to be keenly felt. The stopping of the importation of cotton and wool, and to a less extent of cotton and woolen goods, soon forced to the attention of the German authorities the problem of providing clothing for their armies and for the masses of the people. All over the civilized world wool is the material par excellence for clothing; while cotton is extensively used for clothing, canvas, cordage, and a multitude of other textile products.[1] Cotton is the purest source of cellulose that we know, and cellulose is the chief constituent of high-power explosives; cotton is thus almost indispensable in modern, civilized warfare.

Realizing at once the seriousness of the situation, the Germans and their allies, the Austrians, began to organize and develop means for overcoming this shortage of wool and cotton. Doubtless small quantities of these raw materials were obtained in the United States and smuggled into Germany until the United States entered the war. And even after this period German sympathizers in this country attempted to provide Germany with wool.[2]

In the meantime German and Austrian scientists and manufacturers were trying to produce satisfactory substitutes from every source that gave promise of success. As a result, they have produced more or less successful substitutes from several sources, if we may judge from samples received through various agencies by the Bureau of Standards, and from news-items appearing frequently in the technical periodicals.

Paper yarn or twine is being much used for certain textile products, not only in Germany and Austria, but in many other countries, including the United States.[3] By one process, ribbons from one-fourth inch to three-fourths inch wide are cut from strong paper, moistened by steam, and then twisted by means of a die or spindle. The yarn or twine is then wound into balls or onto spools and placed aside until a part of the moisture has evaporated and the twist has become set. The Bureau has samples of cartridge belts, haversacks, spiral leggings, bed-sacks, etc., used by the Germans and Austrians during the war and partly or wholly made of paper yarn.[4] Sacks woven from paper are now much used in this country as a substitute for the common jute gunny-bag. The paper sack material is usually of much coarser weave than the jute, and is used chiefly for containers for onions and potatoes. Underwear, collars, shirt-bosoms, and cuffs, made entirely of paper, are used by the Germans and their allies. These paper products are fairly satisfactory if kept dry while in use. Various methods of water-proofing paper goods have been used with more or less success.[5]

The stinging nettle[6] has also been experimented with. According to Dr. Richter of Vienna, the Germans and Austrians have developed the cultivation of this plant to such an extent that they can soon make themselves independent of the cotton grower. He states that there is enough land in Austria adapted to the cultivation of this plant to produce twice the quantity of fiber needed by Austria and Germany. Samples of cloth, claimed to be made of nettle fiber without any admixture of cotton, were shown by Dr. Richter as proof that a satisfactory cloth can be made of this material. Dr. von Hippel, president of the German National Office for Textile Plants, is quoted by The Daily Mill Stock Reporter as saying that nettle fiber can be produced as cheaply as cotton, and that yarn of this material "is important also for the linen industry, being particularly useful for half-linen goods, mixed materials, velvets and plushes."

The typha plant,[7] or common cat-tail flag, has been referred to repeatedly during the last three or four years as producing a fiber which might be substituted for cotton. This plant is widely disseminated and grows in wet, marshy soils. Dr. von Hippel states that "typha is assured of a permanent place in the German textile industry, being a substitute for jute and hemp"; and that "a yearly crop of several million kilograms can be reckoned on." A writer in "Le Matin," Paris, doubts that typha will be able to replace cotton as a textile fiber, but says it "is certainly an important source of cellulose, for the manufacture of smokeless powder, etc., and as a raw paper-making material."

Hemp and flax,[9] it appears, are destined to play a larger part in the future of the German textile industry than any of the substitutes mentioned above. With the development and perfecting of rapid bacteriological and chemical methods of retting, and of methods of mechanical decortication of the stalks of these plants, it is probable that the flax and hemp industry in Europe will thrive as never before. It is claimed by Dr. von Hippel that hemp is the most prolific of textile plants, one hectare[10] yielding 1,000 to 1,200 kilograms of fiber, while the same area of land yields 600 kilograms of flax fiber, and 225 kilograms of American cotton. He also states that the area given over to the cultivation of flax has increased, during the war,

*With the Bureau of Standards, Washington, D. C.

1. In this connection, the following references are of interest: Wool and the War's Demands; Textile World Journal 51:508; Ja 15, '16. Wool Supply and the War's Demands; Tex. World Jour 52:625; Ja 13, '17. How War Strategy Affected Textiles; Tex. World Jour. 53:2957; Ja 12, '18 War History of the Woolen Industry; Tex. World Jour. 53.5882; J 1, '18.

2. Alleged Plot to Secure Wool for Germany; Tex. World Jour. 53:4329; Mr 23 '18.
Attorney General's Report on Alleged Plot to Secure Wool for Germany; Tex. World Jour. 53:4694; Ap 13 '18

3. Paper Yarns; Sci. Am. Sup. 84:74; Ag 4 '17. Paper Thread and Cloth; Met and Chem. Eng. 14:284; Mr 1 '16 German Substitutes; Tex. World Jour. 53:4081; Mr 2 '18. How the Austrians Make Paper Twine, Yarn and Belting; Sci. Am. 116:629; Ja 23 '17.

4. See figures 1 and 2

5. Paper Yarn Textiles: Dyeing and Impregnating Them; Sci. Am. Sup. 84:19; Jl 14 '17.
Also: Wood Pulp for Cotton; Tex. World Jour 53:2441; Mr 16 '18 and New Unusual War Textiles; Tex. World Jour. 53:2952; Ja 12 '18

6. German Hemp and American Cotton; Daily Mill Stock Reporter 3:38; F 25 '19.
Successful Use of Nettle Fibers in Cloth Making; Sci. Am. 116:110; Ja 27 '17

7. Typha Plant; A Substitute for Cotton; Sci. Am. Sup. 83:52; Ja 27 '17. German Hemp and American Cotton; Da Mill Stock Rep. 3:38; F 25 '19

9. German Hemp and American Cotton; Da. Mill Stock Rep. 3:38; F 25 '19.

10. A hectare — 2.47 acres.

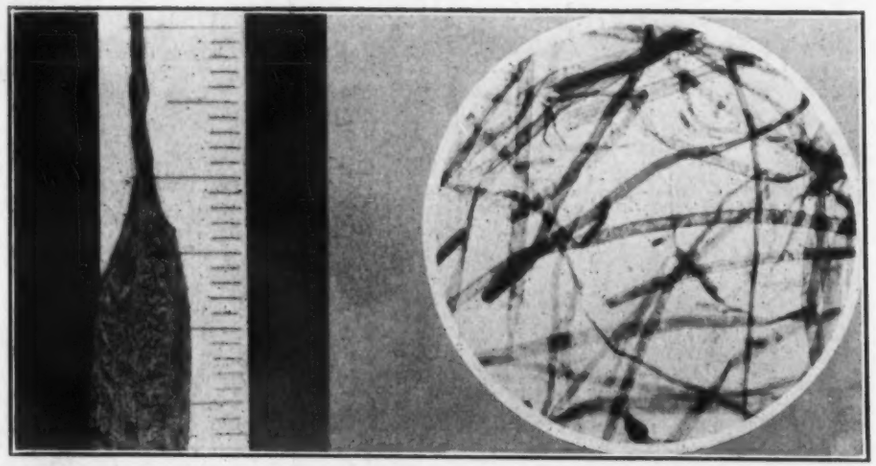


FIG. 1. PAPER YARN FROM GERMAN BED-SACK, PARTLY UNTWISTED AND PHOTOGRAPHED AGAINST A MILLIMETER SCALE. MAGNIFIED 2 DIAMETERS.

FIG. 2. FIBERS COMPOSING PAPER YARN FROM GERMAN BED-SACK. MAGNIFIED 50 DIAMETERS.

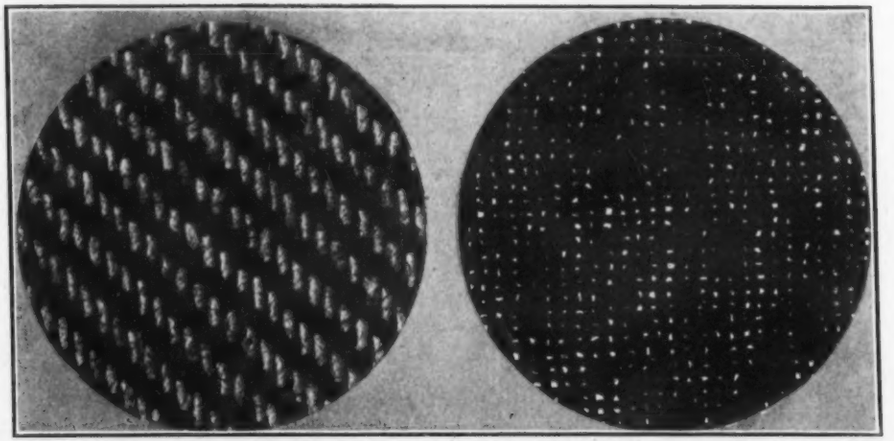


FIG. 3. SAMPLE NO. 1, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 4. SAMPLE NO. 1, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

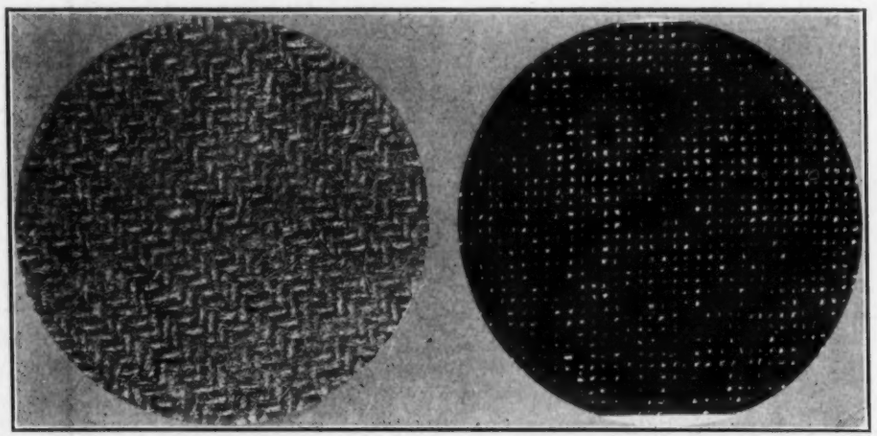


FIG. 5. SAMPLE NO. 2, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 6. SAMPLE NO. 2, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

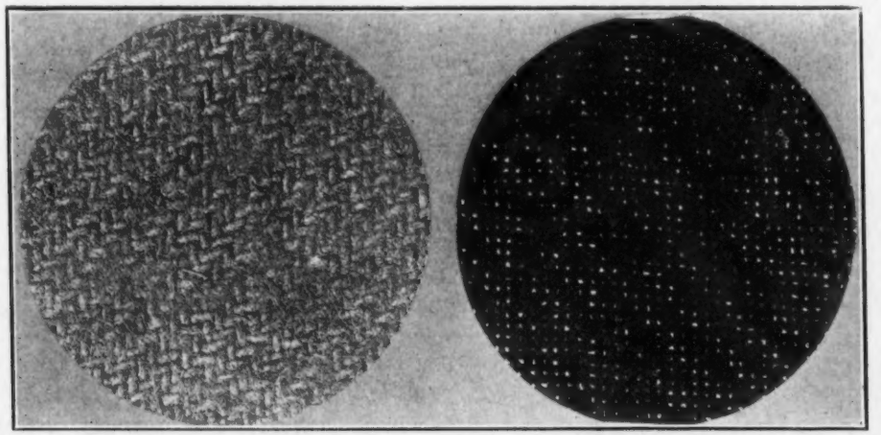


FIG. 7. SAMPLE NO. 3, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT, MAGNIFIED 2 DIAMETERS.

FIG. 8. SAMPLE NO. 3, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

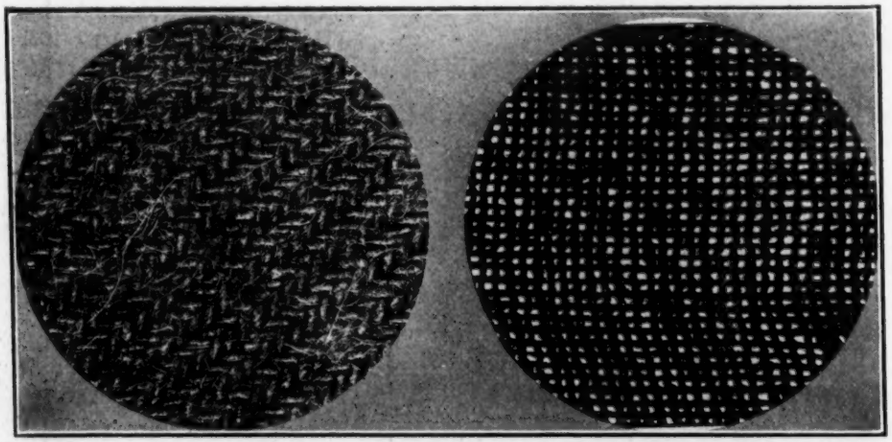


FIG. 9. SAMPLE NO. 4, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 10. SAMPLE NO. 4, GERMAN SUBSTITUTE. PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

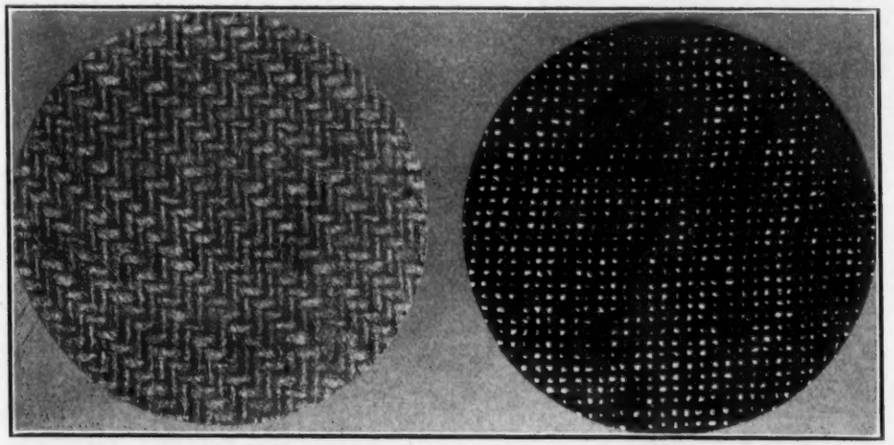


FIG. 11. SAMPLE NO. 5, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 12. SAMPLE NO. 5, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

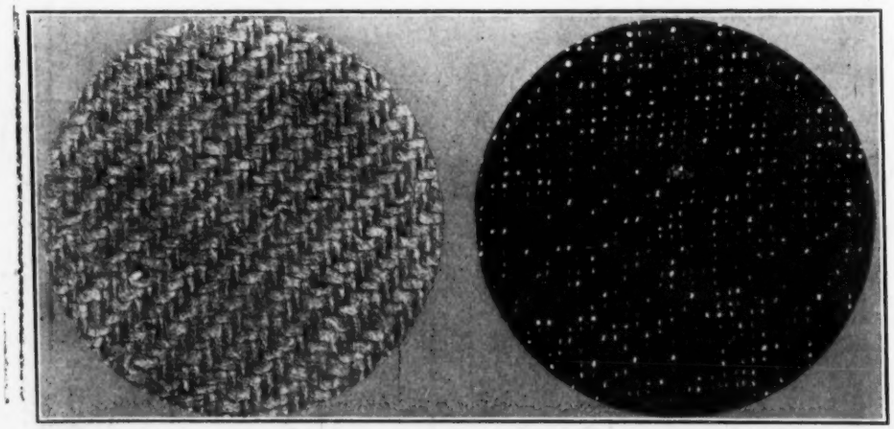


FIG. 13. SAMPLE NO. 6, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 14. SAMPLE NO. 6, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

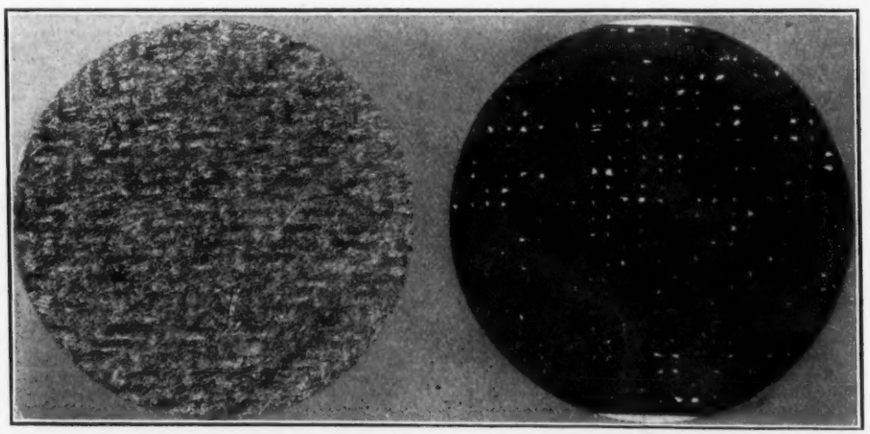


FIG. 15. SAMPLE NO. 7, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 16. SAMPLE NO. 7, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

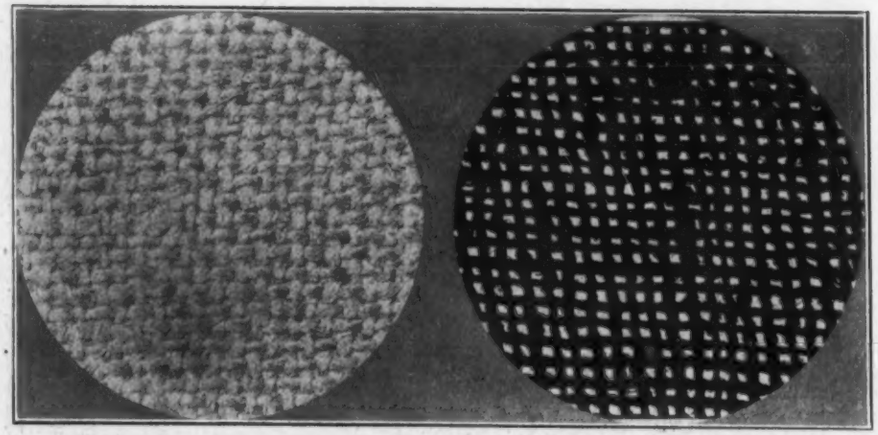


FIG. 17. SAMPLE NO. 8, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 18. SAMPLE NO. 8, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

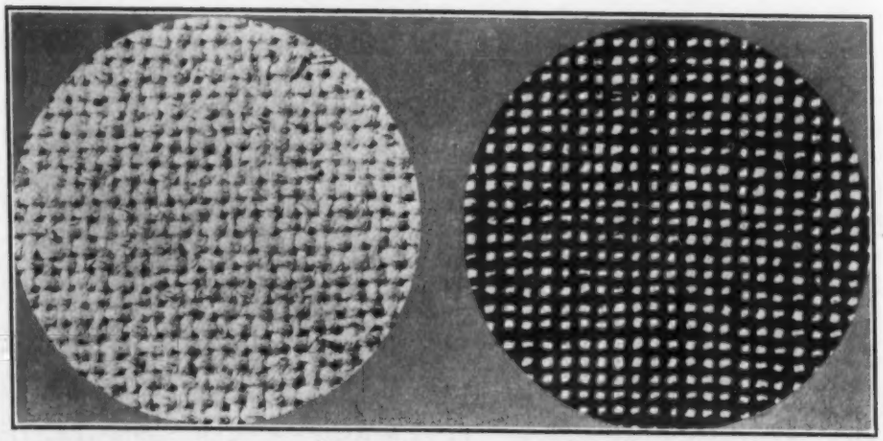


FIG. 19. SAMPLE NO. 9, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 20. SAMPLE NO. 9, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

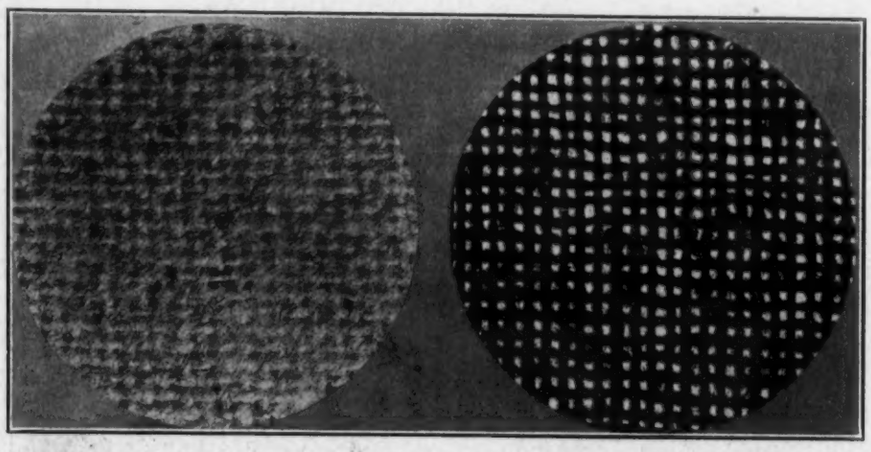


FIG. 21. SAMPLE NO. 10, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 22. SAMPLE NO. 10, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

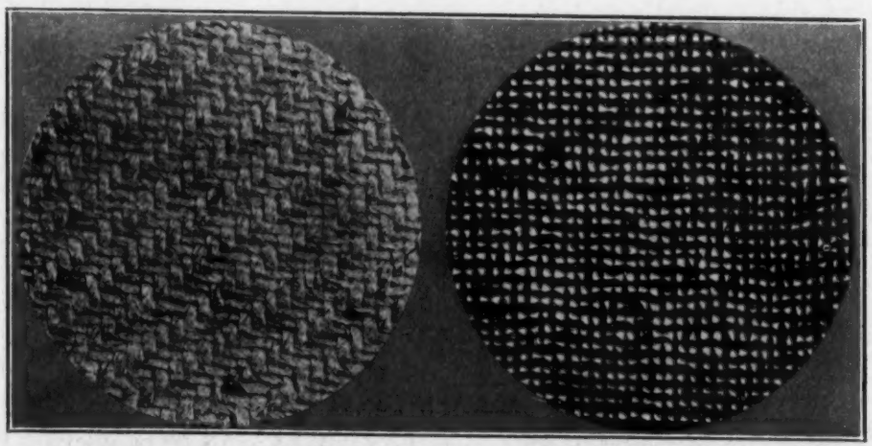


FIG. 23. SAMPLE NO. 11, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 24. SAMPLE NO. 11, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

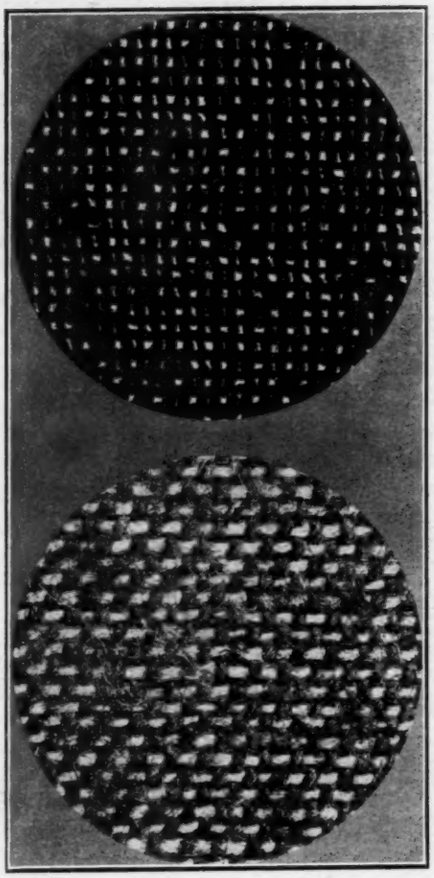


FIG. 27. SAMPLE NO. 13, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 28. SAMPLE NO. 13, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

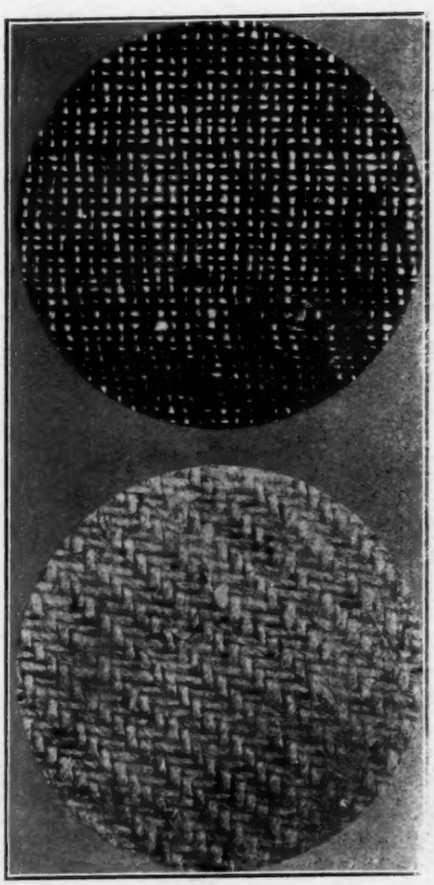


FIG. 25. SAMPLE NO. 12, GERMAN SUBSTITUTE, PHOTOGRAPHED BY REFLECTED LIGHT. MAGNIFIED 2 DIAMETERS.

FIG. 26. SAMPLE NO. 12, GERMAN SUBSTITUTE, PHOTOGRAPHED BY TRANSMITTED LIGHT. MAGNIFIED 2 DIAMETERS.

from 12,000 hectares to 50,000 hectares. He says in conclusion: "There are no technical difficulties which would make it impossible to make Germany independent in this matter within a short time. The old objection that cotton is essential to Germany is no longer valid, because hemp and flax can be treated to form a perfect substitute."

In this connection it will be interesting to examine a number of samples of a German substitute received by the Bureau of Standards through the Bureau of Foreign and Domestic Commerce. The letter of the chief of the Bureau of Foreign and Domestic Commerce to the director of the Bureau of Standards says, regarding these samples:

> "We have just received from Switzerland through the War Trade Board samples of various materials made by the Germans from fibers other than cotton or wool. These samples were shown to Mr. George McFadden, the representative in France of the War Trade Board, by Mr. Ike, the technical expert of the Federal Council of the Swiss government. Mr. McFadden writes in this connection as follows:
>
> "'I happen to know that the Technical Institute of Chemnitz has for many years been endeavoring to develop the use of these fibers and, judging from the samples which I enclose, their experiments have at last met with more or less success.
>
> "'Mr. Ike informed me that these samples are not more sensitive to moisture than either cotton or wool, and that they also wear almost as well.'"

All of these samples, thirteen in number, are of a loosely woven, coarse texture. The greatest part of the fibrous material composing them appears to be flax; but a few of the samples contain a trace of wool of low quality, and four of them contain a little cotton.

The chief problem, it seems, which had to be overcome in making a textile product of this nature from the raw materials used was to produce a yarn loose enough and bulky enough to closely resemble a loosely spun wool yarn.[11] This seems to have been largely accomplished by drawing, rolling and pressing the material into a yarn instead of spinning, that is, instead of twisting the sliver to the extent that this is done in the regular spinning process; for the twist given the yarns from which these fabrics are made is very slight. There also appears to have been some impregnating or sizing material used in the process, which causes the fibers to adhere to one another more firmly than they otherwise would do.

Following are the descriptions and analyses of the individual samples. The samples were too small for accurate determinations in all cases, and the yarn number and the weight per square yard may be only approximately correct. Both the warp and filling of all the samples are single ply. It was impossible in some cases to distinguish between the warp and filling; but where possible, the characteristics of the warp and filling are indicated separately.

Figures 3 and 4: Weave: four-harness twill. Threads per inch: warp: 26. filling: 23. Color: gray. Warp: black. Filling: smutty white. Weight per square yard: 11.5 ozs. Yarn number: warp: 9.7 lea. filling: 7.2 lea. Fiber composition; warp: flax; filling about 5% wool and 95% flax.

Figures 5 and 6: Weave: four-harness twill. Threads per inch, warp: 30, filling: 30. Finish: slightly napped one side. Color: black. Weight per sq. yd: 9.4 ozs. Yarn number: warp: 13.2 lea., filling: 13.0 lea. Fiber composition: warp and filling flax with trace of wool.

11. The spinning was probably done by what is known as the plate system, but might be done as cheaply by what is known as the woolen system combined with the Pease frame.

Figures 7 and 8: Weave: four-harness twill. Threads per inch: warp: 30, filling: 30. Finish: slightly napped and calendered. Weight per sq. yd: 8.5 ozs. Color: brown. Fiber composition: warp and filling 5% to 10% wool; remainder flax. Yarn number: warp: 13.6 lea, filling: 13.6 lea.

Figures 9 and 10: Weave: four-harness twill. Threads per inch: warp: 30, filling: 28. Finish: slightly napped. Weight per sq. yd: 9.0 ozs. Color: olive green. Fiber composition: warp and filling 5% to 10% wool; remainder flax. Yarn number: warp: 13.9 lea, and filling : 12. 4 lea.

Figures 11 and 12: Weave: four-harness twill. Threads per inch: warp: 30, filling: 30. Color: dark blue. Weight per sq. yd: 7.9 ozs. Yarn number: warp, 14.5 lea; filling, 14.5 lea. Fiber composition: warp and filling, flax with a trace of wool.

Figures 13 and 14: Weave: four-harness twill. Threads per inch: warp: 30: filling: 30. Finish: calendered. Color: purple blue. Weight per sq. yd: 7.95 ozs. Fiber composition: warp, flax, filling, flax. Yarn number: warp: 14.3 lea, and filling: 14.3 lea.

Figures 15 and 16: Weave: Four harness twill. Threads per inch: warp, 23; filling, 23. Finish: slightly napped. Color: Dull red. Weight per sq. yd: 13.95 ozs. Fiber composition: warp, flax; filling, flax. Yarn number: warp: 14.0 lea, and filling: 14.0 lea.

Figures 17 and 18: Weave: plain. Threads per inch: warp: 20; filling: 18. Finish: calendered. Color: medium blue. Weight per sq. yd: 7.4 ozs. Fiber composition: warp and filling: flax with a trace of cotton. Yarn number: warp: 10.0 lea and filling: 10.0 lea.

Figures 19 and 20: Weave: plain. Threads per inch: warp: 20; filling: 20. Finish: calendered lightly. Color: dirty white. Weight per sq. yd: 8.3 ozs. Fiber composition: warp and filling: 20% to 25% cotton; a trace of wool; remainder flax. Yarn number: warp: 9.0 lea and filling: 9.0 lea.

Figures 21 and 22: Weave: plain. Threads per inch: warp: 21; filling: 19. Finish: slightly napped. Color: dirty white. Weight per sq. yd: 8.0 ozs. Fiber composition: warp and filling about ½ cotton; trace of wool; remainder flax. Yarn number: warp 10.0 lea and filling 9.5 lea.

Figures 23 and 24: Weave: four-harness twill. Threads per inch: warp, 30; filling, 25. Finish: calendered. Color: dirty white. Weight per sq. yd: 7.1 ozs. Fiber composition: warp, flax; filling, flax. Yarn number: 15.0 lea and filling, 13.4 lea.

Figures 25 and 26: Weave: four-harness twill. Threads per inch: warp, 32; filling, 27. Finish: slightly napped. Color: dirty white. Weight per sq. yd: 8.4 ozs. Fiber composition: warp, flax; filling, flax. Yarn number: warp, 13.5 lea and filling, 13.5 lea.

Figures 27 and 28: Weave: plain. Threads per inch: warp, 23; filling, 21. Color: dark gray; warp: iron gray; filling, black. Weight per sq. yd: 7.9 ozs. Yarn number: warp, 10.0 lea and filling, 10.0 lea. Fiber composition: warp, flax; filling, about 10% cotton; trace of wool; remainder flax.

For one of two reasons, or both, a man does not mind his own business. Either he has no business or he has no mind.

Southern Waste Men Organize.

At a recent meeting of the cotton waste interests in Atlanta, a waste association, to be known as the "Southern Cotton Waste Association" was formed. George C. Speir, of Speir & McKay, was installed as temporary chairman and presided at the meeting. L. S. Witman, of the Royal Cotton Products Company, was elected secretary and was authorized to formulate plans leading to a permanent organization.

The organization was formed to give the dealers and sellers of cotton waste better opportunity to expand their business in the southern section of the United States.

There were a number of representatives of this growing industry present and most of them gave their views on the subject. Some favored a separate organization while others advocate affiliation with the Boston Cotton Waste Association. C. F. Kirkpatrick, of the West Point Utilization Company and M. Eisemann, of the International Cotton Products Company indorsed the former plan. Other speakers taking this view were A. W. Chase, W. H. Reeves, K. Koplin, H. Koplin and L. S. Witman. H. H. Huff of West Point favored affiliation with the Boston Waste Association. This view was shared by C. H. McMillen, of the Edward Rose Company. Committees were appointed and a meeting was arranged to be held soon when the plans for a permanent organization will be announced.

"Textrin Themes" is the title of a booklet issued semi-occasionally by the Hopedale Manufacturing Company, of Milford, Massachusetts. The first edition is the June issue. George Otis Draper, recently returned from service in France as Captain with the Aviation Section of the A. E. F., is editor of the publication. He is also vice-president, sales agent and advertising manager of the company which issues the booklet. The title of the publication is derived from the Latin word *textrinus*, "pertaining to weaving," and theme, "a subject of discourse, or discussion." The pamphlets are intended to stimulate discussion. In the first issue a description of the new "Nordray" loom is given. The editor requests the names and addresses of all overseers of weaving, and Textrin Themes will be sent to any such overseer requesting it, as it is issued from time to time. The breezy style in which the material it contains is written is certain to attract the interest and attention of all manufacurers who have the opportunity of reading this first number.

Practical Cost Accounting.

(*Continued from page* 695.)

etc., costs over the various sizes of yarns. No doubt these costs are influenced by the size of yarn, but the carding cost, for instance, would be more accurate if the cost was distributed over the roving produced instead of the yarn. The man who is using this system is getting figures that satisfy him, but he has a small plant.

In a later issue of COTTON I will outline a system that will be efficient for a large mill, manufacturing a variety of goods.

The Manetta Mills, Lando, S. C., have let a contract to the Sanitary Engineering Company of Charlotte for the installation of sanitary sewage disposal outfits for the operatives' homes in their village.

Reducing Labor Turnover

BY "GOLDEN RULE."

Some men realize the importance of engaging help in a proper way. A large number of men whose duty it is to hire help do not fully understand how to do it right. The man who is entrusted with the duty of keeping up the supply of help for a department of a factory, or for the whole of a large plant, has a great and very important work to do. When a person applies for a job to an overseer, and he is told to "come around tomorrow," it is a very unsatisfactory way to hire anybody, and yet much of the hiring is done in this off-hand style. Hiring out for a job, in the majority of cases, has become so ridiculous that no wonder we have so many "bums," "tramp help" and "don't care" sort of help in the mills.

Some overseers pay so little attention to the proper manner of hiring help that they are always in trouble with their workers. That is why they are so unsuccessful in the management of their departments. There are some men who are very prudent and choice in the selection of their help. And they are equally as prudent in the manner of engaging their help. Their success reflects their better judgment.

There is a vast difference between the right and the wrong way of hiring help. The wrong way demoralizes the help, and causes any amount of useless shifting of help from mill to mill. And worse than this, it also causes changes of overseers, and even the entire management at times, besides holding down the legitimate profits of invested capital—profits which stockholders have every right to expect from men who should use better judgment in the handling of help.

The author of this article is the manager of a well known mill. The suggestions he makes are founded on years of experience in cotton manufacturing and are worthy of careful study and consideration. The successful manager of an industrial establishment is usually a student of psychology. The ultimate effect of any action by the management on the human equation within the mill determines his attitude for or against such an action. Vice-President Marshall said, in his talk at Atlantic City, "Most anyone can hire a hand. Most anyone can hire a head. But who among you can hire a heart?" This is an effort in the right direction and other suggestions are in order.

The simple matter, as it were, of hiring help is a *large* job. Whether it is done by an expert employment manager, or by the overseer of a small department, the work is the same. The results in the end are the same. Help not properly hired never do their best, or at the least, are apt to fail in giving due results. The reason is obvious—the roaming class of help play the game as the pace is set from the start. The better class of help soon find that where help are not properly hired, the plant is usually managed under the same loosely governed manner, and they soon become disgusted and leave.

There should be more unanimity in the methods of hiring help. Time should be taken to go into details regarding the applicant's makeup; where he has been; what his proclivities are. It does not take long to draw a person out so that they will tell their history, and reveal their interest and purposes quite clearly. The average employer is apt to consider many words, or more effort to get at his would-be workman's character, a waste of time. Here is where the big mistake is made. If time were taken to go into details, some applicants would be rejected, and others, instead of being rejected, would be engaged.

Going into the details of our subject, we will understand better the purpose of this article. Here is a hand who applies for a job. The overseer says, "Yes, come in the morning." In the morning the hand is mechanically shown the place of work, and practically told to "sink or swim." This hand is not pleased with the cool reception tendered. Neither does the manner of being set at work appeal to the worker. Later in the week the overseer comes around with a lot of bad work which the new hand has made, and deliberately let pass by because the place is regarded as only temporary, and the first pay day is going to be the closing event of effort with "conditions" as they are in that plant. The hand is shown the bad work, and is only too glad to say, "if you don't like my work, pay me off now." The overseer is on his dignity, wastes neither words nor time on his "impudent" subject and appears with the coveted "bill-of-my-time," and discharges his "good-for-nothing" worker in no pleasant terms, and possibly with vulgar terms thrown in. Now, what is claimed is that a great wrong has been committed to the hand, and to the company. There has been no fair dealing whatever, and the corporation pays for these mistakes, which often amount up into the thousands of dollars annually.

But the kind of overseer just described holds onto his job—as long as he can fool around with his employer, and make him believe he cannot get good help, and that he feels much persecuted. He poses as a martyr.

For our second example, we will take the same worker and follow her to the next place where she applies for work. We will suppose that she is a speeder hand, and that the next place has an overseer who knows his business from A to Z. As she approaches the main office door, she is courteously greeted by the watchman in charge. She is assigned to a comfortable *ladies'* waiting room, where there are a few comfortable chairs, a table with some magazines thereon, a large size mirror, ice cold water, and having clean toilet connections. She is assured that the overseer will soon respond to interview her. As soon as he appears an interview takes place in another properly situated consultation room where both may sit and talk matters over. He spends half an hour talking the matter

over. He shows a keen interest in his applicant's welfare. He very politely asks a fair list of questions. He makes some carefully worded statements about the benefits of being employed by his company. Names the advantages, speaks highly of the management, and of the class of help at work. Also that he is very choice of his workers. Tells her what he wants, and what he expects. Explains that he would put on one or two more hands if they would work steadily and make good work. That he expects a hand to be strictly honest with him. That he does not want a hand to roam around the plant, nor to talk bad about anybody. Expects his hands to be very courteous at all times to the other hands *in the mill* and *out of the mill*. If a hand stays out, he wants his help to obtain permission, and that he will gladly accommodate whenever he can. If a hand is sick, he expects word to be sent to him if possible. Another thing he is very particular about is that, when necessary, he expects a hand to be very accommodating to him. He may want her to operate in some other part of the mill whenever work slackens on her particular machine, or because of other reasons as required. That he wants his help to be neat, picking up things and keeping things in their proper place where they work. He goes on and tells her a whole lot of other things, and he explains the reasons and the great mutual benefit of being "on the square."

This hand understands the system, and for whom she is going to work. She comes in on the following Monday morning with an engagement card in her hand. When she is met by the same old watchman for the second time, he smiles even the broader, and this time, she smiles in return. He, the watchman, very kindly tells her that he is glad she is coming here to work, and that she has made no mistake in joining the ranks of this mill. The overseer is notified, and he comes down, with alert and courteous demeanor, and he shows her the work. He shows her a neat locker where her clothes can be kept clean and secure. He also introduces her to Miss So and So, who works in the next alley, and who will show her the sink room and the other conveniences, such as where to have her dinner pail warmed, if she carries one with her, etc. She finds herself surrounded by satisfied, loyal help who have a good word to say for everything about the mill.

When pay day comes, she finds that her name has not been left off the pay roll, and that there is no mistake in her pay. This often occurs when new hands are started. This is a bad thing and gives the wrong impression. She also finds in the pay envelope a card on which is shown a fine view of the mill, and a cut showing a brand of its specialized product. On this card is written, in the overseer's own handwriting, "I thank you for the good work you have done in your first week's employment, and which is helping to maintain the splendid reputation of this mill in the market, and I hope you will remain on the job a long time with us." The overseer is sure to come around occasionally, and exchange a word or two on things in common, fitting them in with a sympathetic precaution to continue making good work, etc. No further remarks need be made regarding the interest of this once careless hand. She works with a will. She is perfectly willing to substitute. She is satisfied, and is not looking for trouble, nor for a change of employment.

The difference is in the hiring, and not always in the help. Poor hiring of help makes good help poor help, and poor help worse. Proper hiring of help makes good help out of poor help, and makes good help better. No better investment could be made than to start a general educational compaign on "How to Properly Hire Help." There are now training schools for training help how to sell goods at retail over the counter. Why not a training school to teach men how to hire help, and how to manage them after they have once engaged them?

One of the most important questions to ask an overseer when engaging a man for this responsible position, is to ask him, *"Do you know how to hire help?"* And *"Do you know how to take care of your help after you get them?"*

Thus far we have used only plain words. This article carries with it no algebraic formulas, no deep scientific terms, and there are no charts nor carefully drawn diagrams to prove the arguments. It is just a plain subject, handled in very plain words. But if the truth were fully known in detail, concerning the pros and cons of this all-important subject, elaborate charts could be drawn, and the lines and curves would show an appalling story of this vast economic question. A careful study of the records would show that the loss runs up into the millions for the mills, and who can say if it is much less for the help who lose vast sums of money shifting around—the costs of moving, broken furniture, sickness on account of strain and change of locality, etc., besides the loss of regular time in moving?

The loss to the mills on account of help not properly hired and settling them down is large and varied. The cost of breaking in new help, skilled or unskilled, is always more or less. Of course, it costs more for breaking in a green hand than for an experienced one. Breaking in a green hand may cost $50 to $500, depending upon circumstances. The loss often accounted for as a consequence of unwise changing of overseers, superintendents, and agents, has been enormous in some mills. There is the loss caused by idle machinery waiting for new help which might have been operated by the steady old help if they had been properly anchored. This entails a loss not only on production incident to the idle machinery, but idle machinery also increases the cost of production on the machinery which is being operated with less help.

Second; There is the bad work made while all this transient help is being harbored, and the extra waste involved because of this careless class of workers.

Third; The waste of supplies because careless help are not economical. They use more oil, and more of it goes on the floor than onto the machinery. They break more machinery, thus entailing much more repairing. This class of help are also apt to sponge, or to help themselves to various supplies, etc.

Fourth; The influence thrown out and circulated among the better class is depressing and injures the efficiency. In other terms: the disease is easily catching, and discontent is spread throughout the mill, the whole tending to demoralize things in general.

Fifth; The wrong kind of advertising that a mill is given around the country by this unsettled class of help poisons the public.

As viewed from the various angles, it can be fully understood that an endless chain of injury is done to a plant where the help question is not properly worked out with a will to build a permanent future. *"Build for the future"* should be the slogan and practice of the employing forces

throughout the plant. So important is this matter that the mill officials, together with all their assistants, should study the help problem with great care. Instructions should be given each man who has to do with the hiring of help, as to how to proceed intelligently. A worker should never be discharged until the merits or demerits of the case have been passed upon most carefully by the higher authorities. Every discharged hand is, for a long time, more or less of an enemy. A mill needs all the friends it can make. It cannot afford to have a single enemy. It is also very important to ascertain the reasons why help want to leave when notice is given. It often occurs that diplomacy may win.

But the careful reader of this article may ask, "What is the best list of questions to ask an applicant for work? What should be the uniform system which would seem to work out and work to the best mutual advantage of all concerned—the help and the mills?" In answer to this, it is interesting to give the list of questions which some of our most careful employers of help do ask applicants, and also the reasons for asking them.

1. Name.
2. Address.
3. Age.
4. Married, or single? If single, do you support others?
5. How many children?
6. How many workers in the family?
7. Are you working now?
8. In what mill?
9. At what kind of work?
10. At what pay?
11. How long have you been at work where you worked last?
12. Why do you want to change places?
13. What other mills have you worked in?
14. How long in each mill?
15. Reasons for changing so often?
16. Nationality? Are you naturalized? How long in this country?
17. What church do you attend or belong to?
18. Can you read and write?
19. What languages do you speak besides the one you ordinarily use?
20. What other kinds of work have you done besides the work you mention?
21. Is your health sound?
22. Do you want steady work, or simply substitute?
23. Have you any special talent, such as music, or painting, etc., and do you exercise it?
24. If you are given employment here, will you move near your work?
25. Do you know anybody here?
26. Why do you apply for work here?
27. How long do you expect to be able to work for us?
28. Do you know of other workers who are thinking of asking for work of us?
29. Can we be of any assistance about getting moved and locating a tenement, and how many rooms will you need?
30. Have you any letters of recommendation with you, and can you give us references?
31. Are you temperate, and do you use tobacco or snuff in any form?
32. Will you agree to give us a week's notice whenever the time might come that you would want to leave our employment?
33. Of course, you will give a notice where you now work before leaving them, as this is very desirable.

Now, this list of questions, although there are thirty or more of them, if asked with careful consideration, will enable the employer to know with whom he is dealing, and he will know the character of the person who wants to work for him. These questions need not be asked in the regular order given. A number of these may be ascertained while talking in an ordinary conversation of much less than a half-hour's time. However, it pays to take the time, and in many cases an applicant can fill out the blank spaces opposite each question, or the employer—or any man who does the hiring—can fill it out himself by directly asking the questions in their regular order, or as he finds the answers to many of them during a few minutes' ordinary conversation.

In conclusion, we must consider the utility of these questions. In other words, we must prove to those who believe this to be a waste of time, that they cannot afford not to ask these questions. The man who hires help must remember that he is buying labor. And it is strange that buying labor is not considered as important as buying a cow or an automobile. Hiring help is not buying men and women, but buying the labor that they have to sell. They have a right to sell it where they feel that it will be to their best advantage. The man or corporation who pays for labor has a right to buy it of one whom he feels certain will live up to the contract. Hiring an ordinary hand which now averages from $1,000 per year, and more, involves considerable responsibility. It should be done in the right way. $1,000 represents the price of a good automobile. When the man who hires help goes in the market to buy a car, he takes time. He does not tell the first man he sees that he wants him to bring him a new machine "around in the morning," and that he will have the money ready. He has a few questions to ask first. He wants to assure himself about the power of the machine. Will it pull him out of a hole? Is it a good hill climber? Is it a self-starter, etc? If the man who hires help had to pay with his own money the price of those whose labor he is buying, he would be much more prudent. He would want to make certain that he was hiring a good worker—one that would take care of the load, and be a *self-starter*, etc.

Referring to the first six questions, it would seem unnecessary to comment upon these, and yet they have much bearing on the matter of properly hiring help. It is well known that often a hand has been set at work without first knowing the age of the person. Later, it is sometimes discovered that, although the person had every appearance of being old enough to cover the school law, the worker had to be sent out to attend school, or else the same hand required a school certificate before having been employed, etc. Even a master mechanic was set to work in a well known mill who had every appearance of being of age, while it was discovered that he was only seventeen years of age and was not old enough to hold the job—the state law requiring that a man should be of age before he could perform some of the dangerous work involved with the position to be filled.

Regarding name and address, people have been hired without knowing this. The hands did not come in at the

(*Continued on page* 733.)

Notes on Mercerizing

BY RAFFAELE SANSONE.

When the boiling out process is carried out on cotton cloth goods with the ordinary methods on the kiers it is afterwards necessary to open out the material from the rope form to full width, by adopting a means for the purpose that is as cheap and rapid as possible. Several sorts of apparatus are at present to be had for a similar operation, being generally known under the name of scutchers, or openers. The working principle of one of the most used types of such scutchers or openers can be gathered by considering the illustration, Fig. 1.

This shows a device consisting principally of a solid iron framing on which a beater, a pair of opening rollers, fluted in two directions, and several wooden nip rollers, with the necessary driving pulleys, are fitted. The apparatus is therefore of great simplicity. It can be fitted before any machine conducting the washing out of the hot lye before sending the material to the mercerizer.

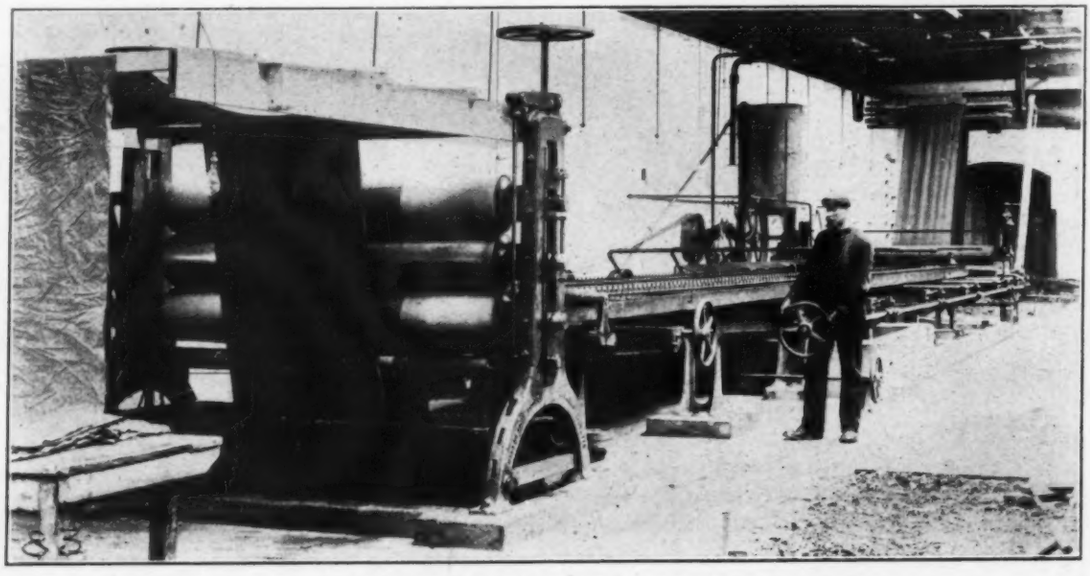
The use of a similar apparatus can however be avoided altogether if the boiling out process and all mercerizing operations are conducted in full width.

The mercerizing process conducted on cotton piece goods that have been submitted to the boiling out process is complicated and requires, if conducted with any success, first-class machinery, and all these economical applications that can assist or cheapen the treatment. The number of the mercerizing plants at present at disposal for the purpose is however exceedingly large and it is very difficult to say which amongst these produces the best results. A close study of the question generally secures the plant offering the best advantages as regards production, price of treatment, etc.

A modern cloth mercerizing plant conducts generally five thoroughly different operations, that can be summarized more or less as follows: (1) the impregnation of the fabric in the strong caustic soda lyes; (2) the stretching of the lye wetted material; (3) the washing out of the alkali; (4) the passage through a scouring bath; and (5) the washing out of the sour and the preparation for the dyer or bleacher.

In the most modern mercerizing concerns the impregnation of the cotton fabrics in the strong caustic soda lyes takes place on a padding machine, placed before a long two chain iron tenter, where the stretching of the wet material takes place, and which is followed by washing boxes where all possible caustic soda, that it has not been possible to extract or wash out on the tenter, is eliminated partly through a washing in boiling water and partly by a passage through a sour, followed by rinsing in cold running water and often by a soaping. See Fig. 2.

The plant has, however, no souring, rinsing and soaping range for finishing off the treatment of the goods after the mercerizing process, but these are usually placed behind the other equipment. The plant consists of a padding machine, of a tenter and of a washing off equipment.



THE PADDING MANGLE AND TENTER.

The padding machine or saturating mangle as it is also called, contains in this instance three bowls, two of which are of rubber and one of cast iron, that are fitted above an iron trough in a strong iron frame, surmounted by two screw wheels for applying pressure. The strong iron framing is supplied with a spreading arrangement that enters the cloth in the nip of the squeezing rollers without any plaits or folds and as wide as possible, and avoids the drawing in of the workmen's fingers.

In some plants, especially in warm countries, the trough of the padding mangle is supplied with a double wall, and in the space between the two walls the ice cold water is circulated. A similar arrangement avoids the use of too concentrated lyes and reduces the breakage of the selvages.

The tenter is fitted behind the machine in such a manner that the cloth enters without requiring the attention of the workmen, being brought gradually to the wanted width and released when there is no longer danger of shrink-

ing. The length of this tenter varies from thirty to fifty feet, in accordance with what quantity of material has to be treated.

For carrying out the washing of the goods, while these are running through the machine, a series of sprinkling pipes are placed just above the cloth, for spraying boiling water in an opposite direction to that followed by the cloth, this falls out at the end of the machine in a collecting vat from which it is sent to the caustic soda recovery department.

The washbox following the tenter contains a series of

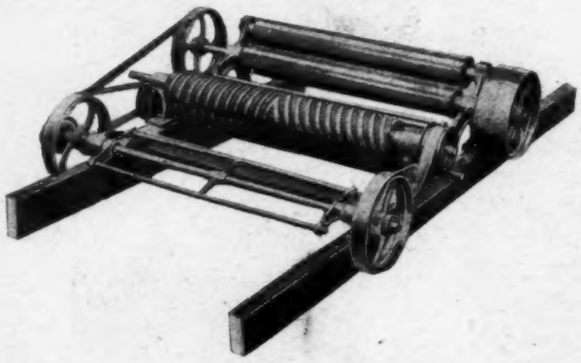


FIG. 1. SCUTCHER OR OPENER.

pressing rollers placed above an iron vat in a heavy iron frame and kept under a certain pressure by levers and weights. Here the material is rinsed repeatedly in boiling water.

The cotton goods, after having been stretched on the arrangement already indicated, enter the padding machine in a strong caustic soda lye measuring from 30 to 35 degrees Be., being kept below the liquid by a pair of guide rollers, and being pressed twice through the squeezing rollers placed just above. This compels the strong caustic soda lye to penetrate thoroughly into the pores of the material and guarantees a uniform impregnation.

On leaving the padding machine the cloth contains comparatively little caustic soda lye, this does not, however, stop it from taking up the mercerized effect on being stretched on the tenter, and certainly reduces the washing with hot water required later for extracting the caustic. On coming out from the tenter the cloth still contains a

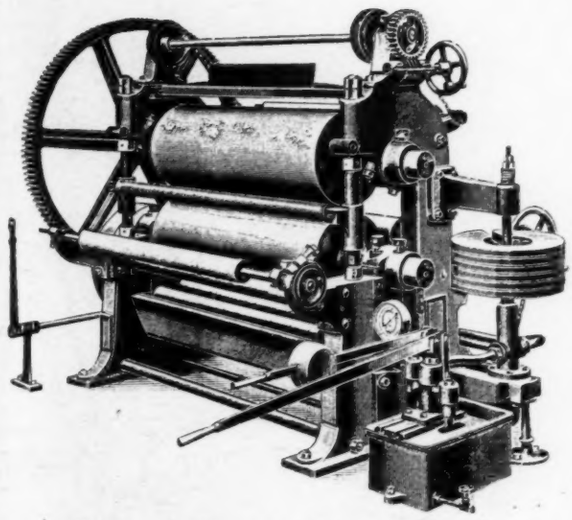


FIG. 3. A HYDRAULIC PADDING MANGLE.

small percentage of alkali. This is very largely extracted in the washing box that follows, and the material is afterwards treated on a suitable souring and rinsing plant where all remaining traces of the alkali can be eliminated completely. Should, however, a higher recovery of the caustic soda be necessary than is possible with the foregoing equipment, the rinsing arrangement on the tenter and washing box shown in the illustration should be substituted by a more energetic rinsing system.

In some works the padding machine is thoroughly detached from the rest of the mercerizing plant, so that after the impregnation in the strong caustic soda it is necessary to transport the material in rolls and the workmen have to enter it separately in the tenter. In other works an impregnation machine working under hydraulic pressure as shown in the third illustration is used for guaranteeing a higher utilization of the strong alkaline lye, and reducing further the quantity to be extracted during the recovery process.

This machine consists of two iron squeezing rollers of fairly large diameter, the bottom one of which is overlapped by an indiarubber covering, while the one above has no covering whatever and is of much larger diameter. Just before the rollers is placed a very narrow guide, or roller, that

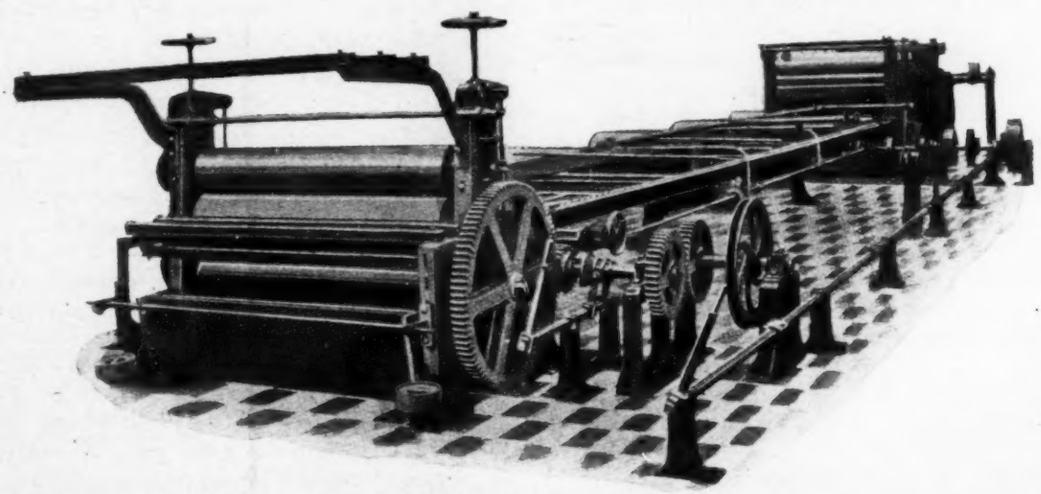
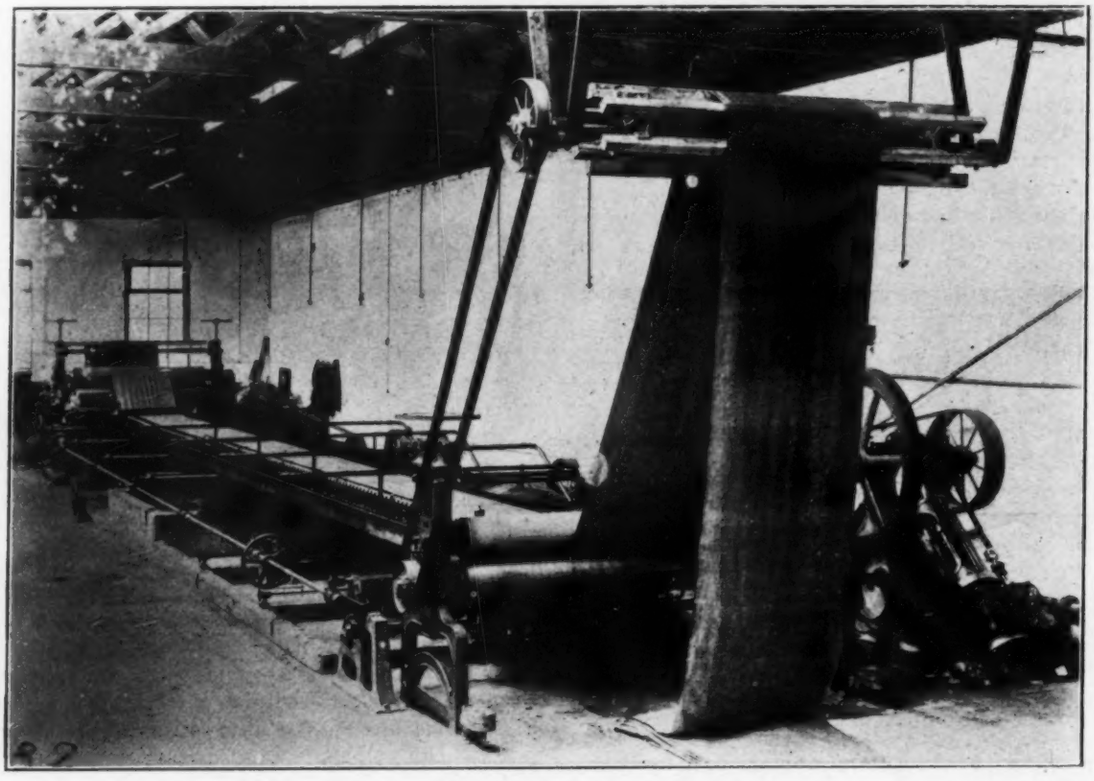


FIG. 2. A TYPE OF MERCERIZING OUTFIT.



THE MERCERIZING TENTER FROM THE DELIVERY END.

avoids, during the spreading of the material the entrance of the workmen's fingers, a very frequent occurrence when a similar safety measure is neglected. The hydraulic pressure is obtained through a pump worked by hand and connected to an accumulator. The lye trough is, in this case, double walled for permitting its cooling through running water, and is furnished with guiding rollers of iron for the cloth.

In some works tenters of great length are used where the goods are stretched after the impregnation in the strong lye and relaxed while this is being washed out, whereas in other works, for better utilizing space, very short tenters are used that are made to move round two central wheels.

Why Special Export Packing is Needed.

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These facts may be a familiar story to the old and experienced exporter, but they must be given constant attention by the newcomer in our export trade, who is perhaps not so well acquainted with the conditions under which his goods are handled in foreign countries.

The Newport Chemical Works, Inc., Passaic, N. J., will have an interesting exhibit at the Chemical Exposition which will be held in Chicago during the week of September 22. The location of this company's exhibit at the show will be at booths 193 and 194 and will be in charge of E. H. Killheffer, manager of the dyestuffs department of the company, assisted by J. W. Kopf, western representative for the company's dyestuff products, and Giles Low, assistant chief chemist of the service laboratory. The exhibit will consist of an ocular demonstration of one of the company's recent advertisements—"Coal to Dyestuff"—and will show the various steps involved in the progress from the basic material to the finished product. In addition to this will be a display of dyed fabrics of a diversified nature.

Scouring Cotton Piece Goods

BY A. FIELD.

A varied class of goods are scoured before dyeing in preference to the more severe treatment of bleaching. Blacks, according to their weight, are given varying degrees of scouring. Dark shades in many trades are scoured only before dyeing; browns, dark slate, navy blue in merino or beetle finishes. Slates, navy, scarlets, maroon, purples, greens, browns; clarets, in the book cover trade, are scoured only before dyeing.

Sulphur brown and sulphur khaki are scoured on the dye jig by boiling in sulphide of soda and soda ash before making up the dye bath with fresh water, the necessary color and quantities of sulphide of soda and soda ash. This previous scouring in sulphide of soda assists the penetration of the color, as the presence of a color solvant in the cloth as it enters the dye bath prevents the color from precipitating on the face with the result that the inner fibers remain only part dyed.

Various processes are adopted for scouring different classes of goods, and often serious trouble may be avoided by using the right method. It is necessary to get away from the idea that thorough scouring is an advantage in every case. To over-scour is a waste of labor and material; the scouring should be just sufficient to get the right shade and the right feel.

Lime scouring is almost abandoned in dyeworks, as it rarely gives an even result and leaves the cloth dry and harsh, in comparison with other methods. The lime boil was usually followed by an hydrochloric acid sour and repeated washings.

A common practice is to put goods for scouring into the kier along with goods for bleaching by the caustic soda boil process, and treat all alike up to the point where the goods are washed after the first hydrochloric acid sour. In this method the largest amount of over-scouring occurs. The goods are punished to an unnecessary degree and compare favorably with goods treated in a more discriminate manner. The manufacturer or the merchant expects the best possible results from the cloth according with its weight and quality. To take 2 lb. of weight out of a piece of cloth without improving its dyeing and finishing qualities is undoubtedly a mistake.

The only impurities it is necessary to remove from many goods for dyeing or very dark shades are chalk or clay preparations that have been added by the weaver. Malting and scouring will often do this. Run through a malt solution prepared in warm water in the croft machine box. The cloth lies in pile all night, and is soured, washed and mangled the following morning. Sometimes scouring and washing only are required for low qualities.

When a boil is necessary it is best to use a low pressure kier and boil only for six hours with a 2 per cent solution of soda ash, as this is quite sufficient to dissolve any impurities necessary to remove.

In many finishes the natural cotton oils that are in the grey cloth, play an important part in the finishing process. To remove the soft greasy feel of sateens that are to be Schreinered, is to make it difficult to get a full soft clothy feel on the finished goods.

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No. 3.—Steep in paraffin detergent and dry. Soap all night and wash well in hot water. This is suitable for logwood blacks of heavy quality and for sulphur black of low quality.

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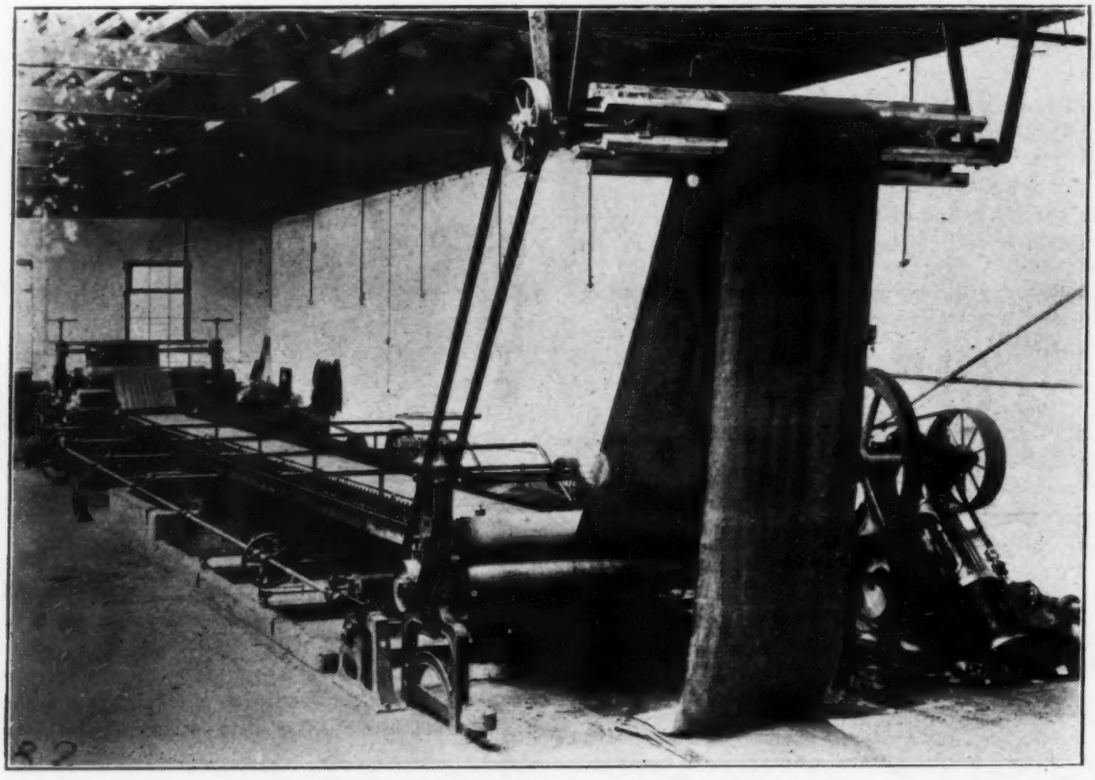

THE MERCERIZING TENTER FROM THE DELIVERY END.

avoids, during the spreading of the material the entrance of the workmen's fingers, a very frequent occurrence when a similar safety measure is neglected. The hydraulic pressure is obtained through a pump worked by hand and connected to an accumulator. The lye trough is, in this case, double walled for permitting its cooling through running water, and is furnished with guiding rollers of iron for the cloth.

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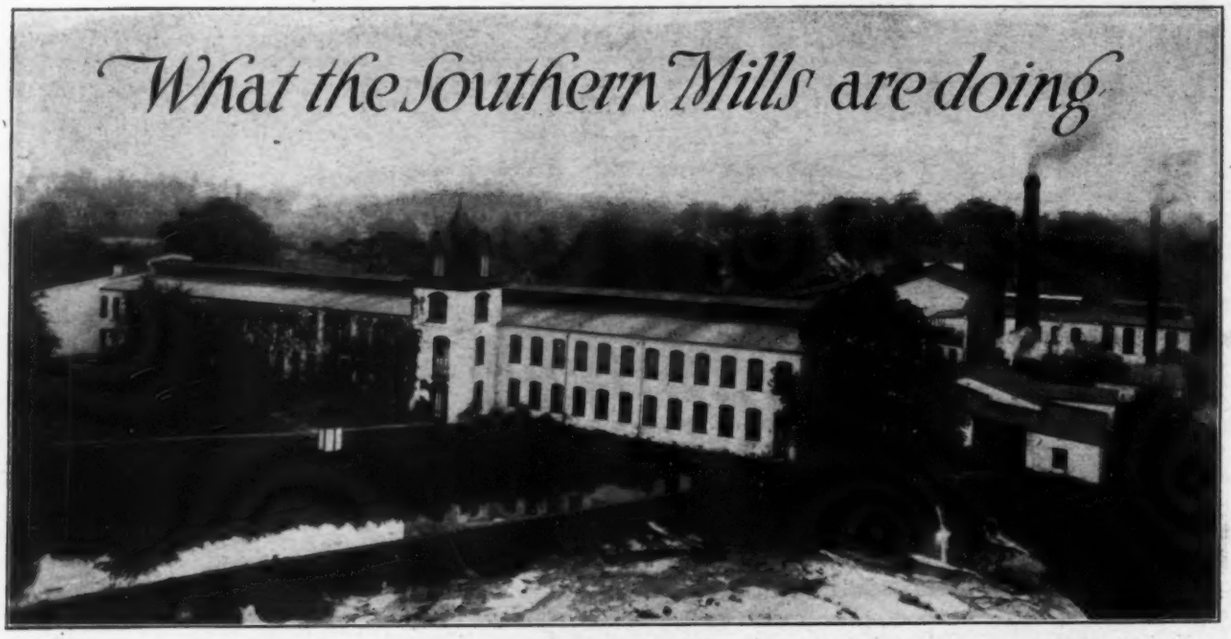
What the Southern Mills are doing



THE CAMPERDOWN MILLS, GREENVILLE, S. C.

The Efird Manufacturing Company will build a new cotton mill at Albemarle, N. C., at a cost of $1,000,000. It will be known as Efird Mill No. 5. The machinery for this new million dollar mill has already been ordered and the plans and specifications for the building show that it will be three stories. This is Albemarle's fourteenth mill. The Wiscassett Company now has eight and the Lillian Mills Company one. It is rumored that Wiscassett Company is soon to begin building another large mill.

Shelby (N. C.) Cotton Mills will build a new addition and install 5,000 spindles with looms and complementary machinery.

The Red Springs (N. C.) Cotton Mills will increase their equipment from 5,000 to 7,000 spindles.

A new addition which will add 3,000 spindles will be built by the Gem Yarn Mill, Cornelius, N. C.

Ridge Mill, Inc., has been organized at Gastonia, N. C., with a capital of $500,000 by R. C. Rankin, A. G. Myers and D. M. Jones, for the manufacture of cotton yarns and textiles, including dyeing and finishing.

The Patterson Mills Company, Rosemary, N. C., will build an addition to be used as a napper room.

Contract has been let for the erection of the Cash Mills, a new $300,000 cotton mill, at Gaffney, S. C. It is the belief of the promoters that this mill will be ready for operation by the end of the year.

The Sycamore (Ala.) Mill of the Comer group will install new machinery and the Comers are to double the equipment of their plant in Alexander City, Ala.

The Tupelo (Miss.) Cotton Mills are building an addition to their plant. This addition will be of reinforced concrete, 100 x 76 feet wide, and will have two stories and a basement. It is expected the work will be finished by October 1. The capacity of the mill will be practically doubled by this new addition. A new feature is the laundry which will be installed in the basement of the addition. This will take care of the laundry work of the mill operatives and will be built and operated by the mill, and will be modern in every respect, the machinery being furnished by the American Laundry Machinery Company. A contract has been let by these mills for new roofing for all the mill buildings. A 1½-ton motor truck also was recently purchased.

The Carolina Cotton Mills, Maiden, N. C., have increased their capital by $100,000 and will build an additional plant, the equipment to be 6,000 spindles. The new building is to cost $35,000, while the cost of the machinery will be $100,000.

At a recent meeting of the operatives of the Fort Mill (S. C.) Manufacturing Company, it was voted to establish a cooperative store. The proposition contemplates a capital of $10,000, to be issued in shares of the par value of $10 each. It will be sold to the employees of the mill, the amount of stock sold to any one person being limited to $500.

It is reported the Roxboro (N. C.) Cotton Mills will soon erect a mill construction addition and 30 cottages. The mill will have 10,000 spindles, with electric power drive.

It is announced the American Metal and Waste Company, Bessemer City, N. C., will soon erect a cotton waste mill and warehouse.

The Opelika (Ala.) Cotton Mills are contemplating doubling their capacity.

A report from Anderson, S. C., is that the Anderson Cotton Mills are to add 320 looms and cotton picking machinery.

The Laurel (Miss.) Cotton Mills have been purchased by Woodward, Baldwin & Company, of New York.

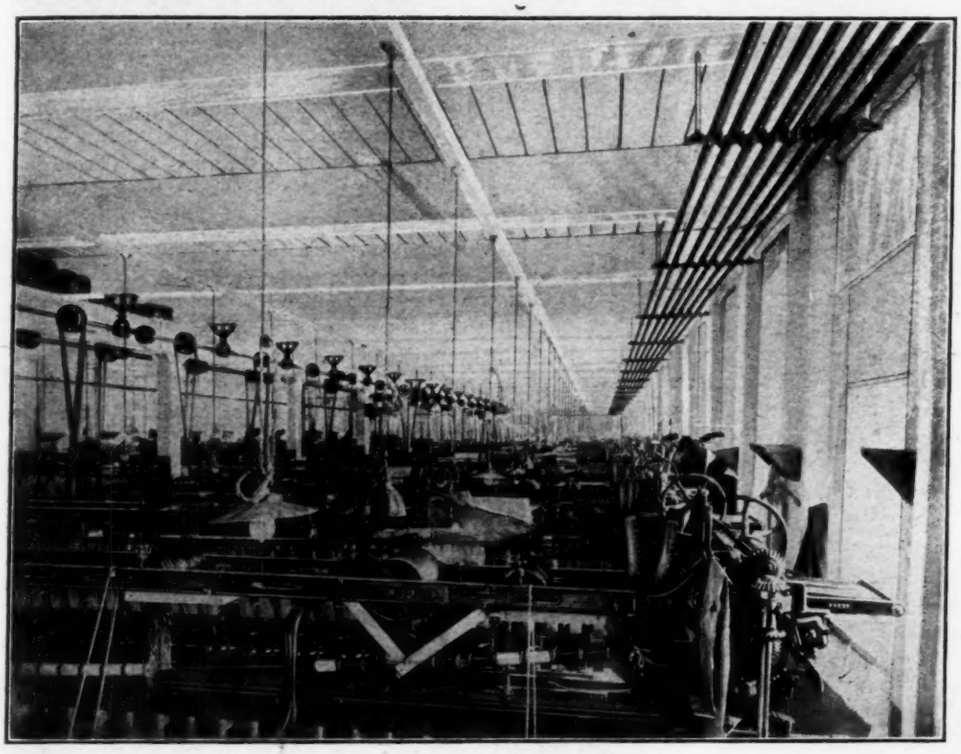
The J. M. Odell Manufacturing Company, Concord, N. C., has filed an amendment to its charter, adding $75,000 seven per cent cumulative preferred stock, in addition to the $200,000 common stock.

A new community cannery has just been completed by the Hart Cotton Mills, Tarboro, N. C.

Work on the Camperdown Cotton Mill Company's new building at Greenville, S. C., has been completed, and equipment which will add 1,500 spindles to the mill will be installed.

The Prince Cotton Mills have been incorporated at Laurinburg, S. C., with a capital of $800,000 by A. L. James, James McNair and James A. Jones. A mill building 153 x 438 feet, to house 12,000 spindles is to be erected.

Paint Your Factory Walls and Ceilings with



Chaffee's Sparkling Mill White

Added Light
Lowest Ultimate Cost
Permanent Finish

Endorsed by Users Everywhere

Prolongs the Daylight Hours — Reduces Bills for Artificial Light— Creates Sanitary Surroundings—Insures Increased Precision and Accuracy in the Workmanship of Employees.

Let us send you free of charge our descriptive booklet and paint panel.

Thomas K. Chaffee Company

Providence, - Rhode Island

The Tuscarora Mills, Mt. Pleasant, N. C., contemplate doubling the capacity of their plant.

The Prendergast (Tenn.) Cotton Mills will add equipment of 20,000 spindles and 10,000 twisters, which will double the capacity of their plant. About 40,000 square feet of floor space will be added to take care of this machinery.

The Thatcher Spinning Co., Ridgedale, Tenn., will add 9,000 spindles with accompanying machinery, increasing the equipment to 30,000 spindles. This additional machinery will be housed in a one-story 100 x 80-foot addition.

At a meeting of the stockholders of the Grace Cotton Mills, which were recently organized at Rutherfordton, N. C., the following officers were elected: President, B. J. Dobbins, of Charlotte; vice-president, C. L. Miller, Rutherfordton, and secretary and treasurer, W. A. Harrill, Rutherfordton. The authorized capital for this new enterprise is $500,000. A site has already been chosen for the plant, which will be a yarn mill. The mill village will be modern in every respect, all the houses having electric lights and running water.

The Ossipee Cotton Mills and the Hopedale Mills, of Burlington, N. C., were recently acquired by a syndicate of which F. K. Rupprecht, president of Converse & Co., New York City, is the head. The Ossipee Mills have 354 narrow looms and make the well known North State flannels. The Hopedale Mills is a yarn mill of about 17,000 spindles, making 8s to 30s single and ply weaving and hosiery yarns. Nothing was given out concerning the price paid for the properties.

The Ranlo (N. C.) Manufacturing Company is adding 20 new houses, of the bungalow type, to its mill village.

Five thousand spindles and 200 additional looms, which will increase the capacity of the plant about 40 per cent, are to be installed by the Hannah Pickett Mills, Rockingham, N. C.

The Roaring River Yarn Mills, to be built at Roaring River, N. C., near North Wilkesboro, N. C., have been incorporated by R. D. Grier, W. J. Palmer and J. G. Hackett. The authorized capital is $200,000.

The Eastside Manufacturing Company, which has been incorporated with a capital stock of $500,000, will be built at Shelby, N. C. The incorporators are E. R. Cash, C. C. Blanton, O. M. Mull, Paul Webb and others. Yarns will be manufactured and the building will start as soon as possible.

Addison Mills, Edgefield, S. C., are constructing six houses of the ready built type, which will be completed shortly. Other improvements are also contemplated.

The Henrietta Mills have contributed $3,000 to the school fund of Caroleen and Henrietta. This will enable these towns to have eight months school.

At a recent meeting of the stockholders of the Hamburger Cotton Mills, at Columbus, Ga., officers and directors for the year were named. They are: Guy Garrard, president, and R. K. Webb, secretary and treasurer; E. P. Owsley, Harry L. Williams, J. B. Huff, Rhodes Browne, George S. Hamburger, Crawford Jenkins, Barschall Andrews, R. K. Webb and Guy Garrard as board members.

The Elk Cotton Mills, Dalton, Ga., will build a 60 x 100-foot addition to house 2,200 new spindles.

The Statesville (N. C.) Cotton Mills are erecting a new dye-house.

The Abbeville (S. C.) Cotton Mills and the High Shoals

(N. C.) Cotton Mills are contemplating extensive improvement in their mill villages. E. S. Draper, landscape artist and city planner, Charlotte, N. C., has been retained by the former to beautify and develop parks in their mill village, and by the latter in an advisory capacity in connection with village improvements.

The Mason Cotton Mills, Kings Mountain, N. C., are building a new cotton warehouse and will build an addition to their mill.

The Lawrence Cotton Mills have been incorporated with an authorized capital stock of $500,000. The incorporators include Charles McCanless, H. N. Fairley and A. E. Reynolds, all of Salisbury, N. C.

A modern, steam-heated, electric-lighted hotel for young women exclusively, has just been opened by the Baldwin Cotton Mills, at Chester, S. C. It is known as the Mary McClure Inn, and is designed to accommodate young women, unchaperoned, who wish to work in the mill but who wish all the privacy of a private home and all the modern conveniences of a hotel. It is in charge of Miss Harris, former assistant housekeeper at Winthrop college. The Baldwin Inn, constructed along the same lines, and which opened recently, is designed to accommodate single men. These mills have also started other innovations, among which are the employment of a trained nurse, who gives her whole time to health work in the mill village, a garden demonstrator, and a day and night school in the mill village.

Three new cotton mills have been organized at Belmont, N. C. They are the Acme Spinning Company, Crescent Yarn Mills and the Sterling Mill. At a recent organization meeting the following officers were elected: Acme Spinning Co., A. C. Lineberger, president; D. E. Rhyne, vice-president, and R. B. Suggs, secretary and treasurer. Crescent Yarn Mills, A. C. Lineberger, president; D. E Rhyne, vice-president, and G. W. Stowe, secretary and treasurer. Sterling Mill, R. L. Stowe, president; D. E. Rhyne, vice-president; J. W. Stowe, secretary, and S. P. Stowe, treasurer.

Work has been begun toward putting the Lloyd Cotton Mills, near Stanley, N. C., in condition to operate under the changed name of the Alba Manufacturing Company. The new mill has an authorized capital of $100,000, the majority of which has been paid in by the incorporators, John C. Rankin, S. M. Robinson, R. F. Craig, A. E. Woltz and A. G. Mungum. The mill will manufacture yarns.

Officers have been elected for the Diamond Cotton Mills Company, a new concern recently organized in Salisbury, N. C. They are as follows: President, D. L. Arey; first vice-president, L. D. Peeler; second vice-president, A. G. Peeler; treasurer and manager, R. Lee Mahaley; attorney, W. H. Woodson. The initial equipment will be 7,500 spindles. A building has been secured by the company which will be remodeled.

The Roanoke Mill Co., Roanoke Rapids, N. C., has added $700,000 to its capital stock to make additions to the cotton products plant. An additional mill is to be built and equipped with 7,000 spindles, with looms, finishing equipment and dyeing apparatus.

The Bristol, Virginia, Chamber of Commerce has inaugurated a movement for the establishment of a cotton mill at that place. It is estimated that the capital stock of the organization will be between $300,000 and $350,000. The plan is to build and equip a mill with at least 5,000 spindles to manufacture cotton yarn, and also erect a mill village.

The Osage Manufacturing Company, at Bessemer City, N. C., was sold recently to N. B. McCanless, of Salisbury, by its owners, West, Baker & Company, of New York City. The Osage mill has been in operation for a number of years. It has 16,000 spindles and 400 automatic looms in operation in the manufacture of sheetings. It is announced there will be no change in the management of the mill.

It is the plan of C. L. Cobb, cashier of the Peoples National Bank, of Rock Hill, S. C., and other interested citizens, to erect a new cotton mill in Rock Hill. Those interested in the proposition hope to raise at least $500,000 for this purpose.

The Pelham (S. C.) Mills, a yarn mill of 10,000 spindles, has been purchased by C. S. Webb and J. E. Sirrine. The mill was owned by McMillan C. King, and was a corporation with a capital stock of $200,000.

A. A. McLean, Jr., of Gastonia, N. C., and Frank Goldberg, of Atlanta, Ga., are the promoters of a 4,000 spindle cotton mill to be erected at Bessemer City. The plant is capitalized at $175,000, Messrs. McLean and Goldberg taking the entire amount of stock. Plied yarns Nos. 8 to 14 will be manufactured.

The New England Mill Situation.

Owing to the prevalence of vacations among operatives production in the cotton mills of this section is unsatisfactory. There is plenty of work to do at most profitable prices for stockholder and worker, but lassitude is general and high wages fail to meet the situation. Most mill superintendents and overseers have ceased to discipline those who leave work without notice as it proves useless in securing greater efficieney. With the advent of colder weather some improvement in the output is hoped for but at the moment mills are finding it very difficult to make deliveries promptly.

Transportation troubles have been very numerous. Strikes among workers of all kinds have been followed by embargoes on shipments. Truck service is becoming a necessity in supplanting the failing efforts of the normal shipping lines. Goods to and from the South and West are congested and mills are notifying agents that it will take some time to clear up the freight already accumulated.

In some of the larger centers of industry an exodus of workers to foreign lands has begun. From one section of Fall River, recently, 420 workers left for Europe. They included Poles, Slavs, Italians, and others who have made a great deal of money in the war years and who are now seeking to take it abroad and re-establish homes there. If it were possible to replace these workers quickly manufacturers would not regret their going, as they have recognized all through the war period that erratic foreign help is a poor asset.

There has been less disorderliness in this section than in some other sections of the country despite the idleness of many who are satisfied to work intermitently. The high cost of living is so general that rich and poor are making every possible effort in common to alleviate it. Until it is lowered it is impossible to hope for any increase in the surplus of mill help in this section.

The severe reaction in prices for print cloths and convertibles in the past month has troubled manufacturers very little. They have regarded it as the inevitable result of speculation in New York markets where an uneven distribution has accentuated scarcity. Most manufacturers have exer-

Barrett Specification Roofs

20 Years of Service Guaranteed—

IN the old days buying a roof very often proved to be something of a gamble.

Maybe you got just what you specified, and maybe not.

The cost per square foot was too often taken as the only standard of value—frequently to the owner's subsequent sorrow.

Today all this is changed.

It was the Barrett Specification which first made it possible for building owners everywhere to obtain, through their local contractors, a *standardized roof*, worked out by roofing engineers and based on scientific principles of modern roof construction.

Today we offer to *guarantee* Barrett Specification Roofs *for a period of 20 years!*

This guaranty is obtainable on any roof of 50 squares or more, in any town of 25,000 population or over, and in smaller places where our Inspection Service is available.

It is a Surety Bond, issued by the U. S. Fidelity & Guaranty Company, of Baltimore.

To obtain this Surety Bond you have only to insert in your building Specifications the following:

"The roof shall be laid according to The Barrett Specification dated May 1, 1916, and the roofing contractor shall secure for me (or us) the 20-Year Guaranty Bond therein mentioned."

The guaranty costs you nothing. We merely require that the roofing contractor be approved by us and that we be given an opportunity to inspect the construction.

We shall be glad to send you a copy of *The Barrett Specification*, with diagrams ready for insertion in your building plans.

UNITED STATES FIDELITY & GUARANTY COMPANY
BALTIMORE, MD.

Barrett Specification Roof
20 Year Guaranty Bond

Know all men by these presents

The Barrett Company

The Barrett Company

United States Fidelity & Guaranty Company

New York Chicago
Boston St. Louis
Cleveland Cincinnati
Birmingham Kansas City
Seattle Peoria Duluth Milwaukee Dallas Salt Lake City
Youngstown Toledo Richmond Latrobe Bangor Atlanta
Nashville Washington Elizabeth New Orleans Bethlehem Columbus

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The 20-Year Bond

We illustrate above the 20-Year Surety Bond that will be given on all roofs of 50 squares or over in towns of 25,000 population or more and in other places where our Inspection Service is available.

Laying a 20-Year Barrett Specification Roof on Building No. 20 of the National Cash Register Co., of Dayton, Ohio

cised great care in selling and have endeavored to dispose of their goods to those who will convert them or distribute them in regular channels of trade. They know that goods are not accumulating in first hands hence they continue to regard the fundamental market condition as sound.

The falling away in prices to the government level of values on the staple print cloths did nothing more than restore the parity of value for cotton and cloth that obtained during the war period when the price fixing boards decided upon a basis of 83 cents a pound for print cloths and 30 cents a pound for cotton. On that basis the mills can make handsome profits. The earnings of mills during the third quarter of the year were very good.

Fall River corporations capitalized at a little over $33,000,000 paid in dividends 3.6 per cent for the third quarter of the year and it is to be remembered that the goods made were sold on a much lower basis than the one now ruling. Mills outside of Fall River have been maintaining good dividend payments and mill stocks have ruled very strong with a rising tendency. There have been some changes of mill ownership in the interval, notably the disposing of the mills of the New England Cotton Yarn Company at Fall River to the interests engaged in tire production. A similar disposition of these properties affecting mills in Taunton and New Bedford occurred some time ago. There has also been a consolidation of three or four large narrow fabric properties in and around Fall River, these concerns being large buyers of yarns.

The labor scarcity is not confined to any one section or center. The mills in Maine and New Hampshire are as short of operatives as those of southern New England. The finishing works and machine shops are all complaining.

New England manufacturers are much interested in the proposed World Conference of cotton interests to take place at New Orleans in October. It is probable that there will be a larger attendance of New England men there than has ever been known in the South at any previous affair affecting the common interests of the planter and the manufacturer.

Some of the large investing and manufacturing interests of this section are convinced that the time has come to do more toward stimulating the expansion of the great asset this country has in cotton, the staple. They see the wide interest that is being taken in other countries to grow crops that will serve their needs. They are more convinced than ever before that the United States can gain and hold the supremacy of cotton growing and cotton manufacturing because of the ability to produce here a staple that is superior in most qualities to anything yet produced elsewhere. The limited use of Egyptian cotton in this country would decrease very fast if more attention could be given to the growth of longer and stronger staples in some of the southern fields.

In addition to the investment that is now certain for the better storage of cotton, and giving the grower a better opporunity to hold his crop, it is recognized that there must be a larger investment in labor saving machinery for tilling and for transportation. The war has taught that a fair price for the staple may be passed on to the consumer after the manufacturer has been assured of his share of the profit for the work. But it is now of the most vital importance that the waste of growth shall be eliminated so that the waste of manufacturing may be lessened.

None of these things can be accomplished so well and so thoroughly as they may be through a closer cooperation of growing and manufacturing interests. For a time political machinations may hold the interests apart but in the long run of the years it is believed that a better basis of common understanding will be arrived at and a more lasting prosperity will be established for both.

In common with many of their selling agents, cotton manufacturers in this section have expressed concern over the rapidity of the rise in values for goods during the past four months. They are apprehensive of the ability of the retailer to secure for his merchandise the very high prices that are foreshadowed in prints at 19 cents, bleached muslins at 32½ cents, staple ginghams at 21 cents, tickings at 45 cents, denims at 40 cents, brown sheetings at 25 cents, and other goods in proportion. Many of these prices have risen from 50 to 100 per cent.

Aside from the financial difficulties of carrying on business with prices at such a high level when the burden of taxation is so great, they feel that public indignation will be aroused, as it has been in the case of high food costs, and may vent itself in a form of price reinstatement that will be hard to overcome. The rise in costs has been constant and in many instances permanent, but the margin of profit has been very wide and fluctuations can occur that will endanger the stability of merchandising. Some concerns have been pursuing a very conservative course, supplying their regular trade with goods and not paying attention to the many opportunities offered to sell the product to new customers as they come along.

Others have sold where the market afforded an opportunity and it is this form of selling that has brought on the reactions through forced sales from second hands. That a high degree of speculation has been attained in gray cotton goods trading has been known by manufacturers for a long time. Some have left the work of correction to agents and others have been willing to take their chances under cover of a ten-day payment and deliveries at mill. So long as the retail demand is maintained on the great scale seen in the past months of peace time reaction, all will go well. There are manufacturers who have foreseen trouble from the time that crop prospects began to dwindle from early estimates, and from the time that it became apparent that financing foreign trade was not to be an easy and simple matter.

There are varying current reports as to the actual volume of production now possible in New England. Some of the larger finishing plants are able to secure an 80 per cent capacity output within the limited working hours possible under a 48-hour week schedule. Many of the large cotton mills have 30 per cent of their looms idle but they are operating more than 80 per cent of their preparatory machinery. Forced by conditions to pay abnormal wages for spinning and carding, they are meeting this situation as best they can and are not encouraging agents to send them anything save simple weaving orders.

Occasionally it appears from well substantiated reports that some mills are running to capacity in limited working hours and this appears to be the case most frequently in villages away from the larger centers. The printers have a great deal of work ahead especially the job printers. Some of the choicest work ever done on fine cretonnes in this country is now passing through some of the printing establishments.

All the business that can be taken care of is reported for three to four months ahead by the concerns making colored

yarn fabrics. This applies to the finer and medium count gingham mills as well as to the heavy goods mills making suitings of all descriptions. There is a far greater demand for very fine colored work than mills can handle, much of the difficulty being in securing the quality of colored yarn needed.

The machine shops have an abundance of work. They are overwhelmed with business from their old clients who are repairing or adding to their equipment. There has been a great increase in the demand for new mills during the past two months and there is every reason to look for a most active winter and spring in all machinery lines. The limit of production rests with labor. Investors seem willing to pay the extraordinary prices asked for new work but machinists are prone to loaf on the job and the output is necessarily restricted.

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

The general strike of cotton operatives for a reduction of hours and an increase in wages lasted exactly three weeks. It has ended in the establishment of a 48-hour week and a 30 per cent advance on the standard wages list, as forecast in my last letter. Wages are to remain unalterable for nine months and hours for eighteen.

The advance conceded means an increase in actual payment of about 13 per cent. It also means that wages are now 140 per cent above the rates of 1914 and 145 per cent above the standard list. It may be said of the settlement that it is the greatest advance ever made by the cotton operatives at one time.

The new "week" is seven and a half hours shorter than the old. It is not yet finally settled how the new hours will be apportioned, but a three months trial is being given to working in two spells of four and a half hours each, with one break of an hour for dinner. The day will begin at 7:45 and the break be from 12:15 to 1:15. Work will finish at 5:30, except on Saturdays when the mills will close at noon, as has long been the custom. The settlement kills one old Lancashire "industry." The occupation of the "knocker-up" is gone. Now that work starts at a quarter to eight, instead of six, he is no longer required to rattle on the window pane and rouse the workers from their beds, a service hitherto usually performed by a retired mill operative for a few coppers a week from each of the clients on his round.

The first annual meeting of the National Federation of Textile Works Managers has been held. The total membership is now about 1,000 and there are branches in Oldham, Burnley, Ashtonunder-Lyne, Preston and Blackburn. The British Association of Works Managers, which has its headquarters at Manchester, is also affiliated. J. R. Derbyshire, of Preston, and Frank Nasmyth, of Manchester, were elected delegates to the World's Cotton Conference in October next.

The newly-formed British Cotton Industry Research Association, of the constitution and objects of which I gave some account in my last letter, has now elected its first council and has in hand the appointment of a Director, who will be a man of the highest qualifications and be responsible for the whole of the organization of the research. A committee of five has been appointed to draw up a scheme of scholarships, in conjunction with representatives of the Empire Cotton Growing Committee.

The rise of six shillings per ton in the price of coal is, of course, a very grave matter for all industries. Here is the comment of one authority as to the effect of the rise in cotton trade: "It has been estimated that the greater cost on a cotton mill of 100,000 spindles will be at least 25 pounds per week. It may be assumed that this will find its way to the price of the manufactured article. In all the processes through which cotton passes from spinning to weaving and finishing, over 200,000 tons of coal per week are used, thus adding 3,000,000 pounds to the cost of production on coal alone, irrespective of increased charges in lighting and accessories of all kinds. Fortunately, spinneds and manufacturers can secure good prices for their goods owing to the denuded state of the world's markets, and for a time this would enable them to pay the alarming increase in the cost of coal, but if the increase is to remain a permanent feature it will seriously handicap the trade unless cheaper means of artificial lighting and steam are brought into use by the aid of science."

Cotton Comment.

BY H. AND B. BEER.

New Orleans, August 16th, 1919.

The delay in ratification of the peace treaty, which is necessary before trading with Germany is possible, the demoralization in the foreign exchange market, the large carry-over of cotton into this season, and the government's campaign to force a reduction in commodity prices in order to reduce the cost of living, has resulted in a sharp decline in values of late.

By reason of all of last year's crop not being marketed, the commercial crop figuring 11,640,000 bales, and consumption by the world of American cotton only 10,620,000 bales, and the fact that last year's crop, including linters, was in the neighborhood of 13,000,000 bales, the world's carry-over of American cotton at the close of July was 2,402,000 bales larger than last year.

HESTER'S FIGURES.

SEASON.	July 31, 1918-19	July 31, 1917-18
Southern mill stocks	665,000	628,000
Counted interior towns stocks	716,000	631,000
Stocks at uncounted towns and plantations	2,193,000	925,000
Total held in interior of cotton belt	3,574,000	2,184,000
U. S port stocks	1,213,000	954,000
Northern mill stocks	504,000	687,000
European mill stocks	285,000	250,000
European port stocks	1,248,000	347,000
Total American carried over July 31st.	6,824,000	4,422,000
Lint cotton carried-over	6,125,000	4,018,000
Linters carried-over	699,000	404,000
Total carried-over, including linters	6,824,000	4,422,000

While the carry-over was larger than generally expected, it contains 699,000 bales of linters vs. 404,000 last year, and probably much undesirable cotton.

As an offset to the increase in the surplus of 2,402,000 bales in excess of last year, the trade is facing prospects for another short crop this year, the August government report indicating a yield of only 11,016,000 bales exclusive of linters, while indications are for a much larger consumption this season.

Because of the great scarcity of cotton goods through-

out the world, the consumption of cotton will likely gradually increase until it becomes of very large proportions, which will probably be reflected in a better demand for raw cotton eventually.

So far this season, or since August 1st., exports from the United States to Europe total 272,000 bales against 160,000 to corresponding date last year. This increase will likely become larger as the season grows older.

As a means of overcoming the shorter labor hours in the mills, and with the view of increasing the mill output, the number of active spindles in America at the close of July were the largest on record—34,134,000 vs. 33,657,000 one year ago, having gained 241,000 during the past month.

That consumption of cotton in the United States is increasing again is denoted by returns for month of July showing American mills to have consumed 510,000 bales of lint cotton the past month vs. 474,000 for June of this year and 541,000 for July of last year.

Every effort is being made throughout the world, particularly on this side of the Atlantic to increase farm and mill production in order to reduce the cost of living, and while this movement is succeeding in the industrial centers, the outlook for the cotton crop is poor.

While the growing crop appears to be making some headway, its progress is not satisfactory owing to considerable damage by weevils, boll worm, etc., particularly in Texas, a state to which the trade looks forward to make a good crop.

An important feature of the growing crop is its lateness in all districts of the belt, permitting insects to destroy the fruit almost as fast as it appears, and exposing, particularly very late cotton, to serious damage in the fall in event of an early killing frost.

It has been very expensive to raise cotton this year owing to unfavorable climatic conditions, high wages and dear foodstuffs, and the South, more independent financially than ever, will be sure to demand a reasonable profit for its product, at least 30 cents or more, basis of middling.

The Yarn Market.

The first few days of August presented a peculiar situation in the cotton yarn market. The advance in prices in some of the grades which began last April and which had been continued up to that time seemed to hesitate, and the price appeared to be undecided as to which way to go—whether to take a revision or continue the upward trend.

Early in the month there were numerous price variations among the respective classes. One high grade yarn was offered for 73 cents for 24s, and other holders asked 76 cents. A sale of 20,000 pounds of 30s Southern frame spun double carded on cones was made for 76, while smaller quantities of the same kind were sold for 77 and 78 cents.

The advance of wanted numbers up to this time was especially marked and in some quarters even the dealers deplored the high prices. Probably the strongest protest came from the knitters, some of whom declared the quotations inequitable. They contended that the variation in prices of like numbers was too great, and with such prices, in some instances the profits made by the dealers must have been enormous. The dealers refuted this argument in a manner that indicated that the consumers were responsible for the conditions about which they complained. Several of the large mills were said to be pretty well covered on their yarn requirements and that in the scramble to cover they forced up prices. However, this condition caused some to turn to other numbers as substitutes, but advances in other lines quickly followed this move and some yarns that had shown little activity began to take a fresh start in life and the prices seemed to try to attain the top of the market all at once.

But the top of the market, which had been expected by some for almost a month, came about the middle of the month; a break in the prices, affecting most of the list and ranging from an easing-off of a cent or so in some groups to a cut of approximately ten per cent in others occurred. This sudden revision in prices brought to an end the continuous upward trend which has been witnessed in this market for almost four months, the crest having been reached early in August, when prices came to a standstill.

Dullness prevailed in the market throughout the entire month. This was less a matter of unwillingness to purchase on the part of the buyers than it was uncertainty over the general business outlook.

Toward the latter part of the month, inquiries were generally lacking as regards the major portion of the list of grades. They were "spotty," being strung out all through the list and not being confined to any particular group and not having reference to any particular number in a given group. This failure of demand to respond to the price concessions created the impression that it might be weeks before a resumption in the yarn movement may be expected and in the meantime, there is a hope among buyers that the prices will slump to lower levels.

Viewed from this angle, however, and taking into consideration that this is the dull season of the yarn market, the dealers are not worrying. They seem to accept as logical the failure of slightly lower prices to attract buyers. And hardly any of the mills are now in the market other than those who have come in to cover their requirements in stocks in which they have run short. But it is shown that this class of business would appear anyway, and that small buying would likely be done without any reference as to price levels.

Reports in the latter part of the month were indicative that another recession in prices would not be at all unlikely. Reports were to the effect, also, that in some numbers that had been hard to move, sales had been made at substantial reductions. Small lots of southern two-ply warps are known to have changed hands at 59 cents for 10s, and 70 cents for 20s, while one buyer reported an offering of 14s, in a lot of about 20,000 pounds, at 60 cents, which he considered very attractive. However, 30s in the same group were being held with a notable firmness, bringing from 88 to 90 cents per pound. The price involved in these deals average about three cents a pound below previous levels.

Dealers insist that such buyers as may be keeping track of the cotton market, as related to yarns, need not expect yarn prices to fall in harmony with those of the raw material. Such a direct influence of the cotton quotations over yarn prices, they point out, is not infallible even in normal markets, much less at the present time.

Following are middle of the month quotations on the Philadelphia market:

Southern Single Skeins.

4s to 8s	55	@56	10s	58	@59
12s	59	@60	14s	60	
16s	61		20s	64	
24s	70		26s	80	
30s	90				

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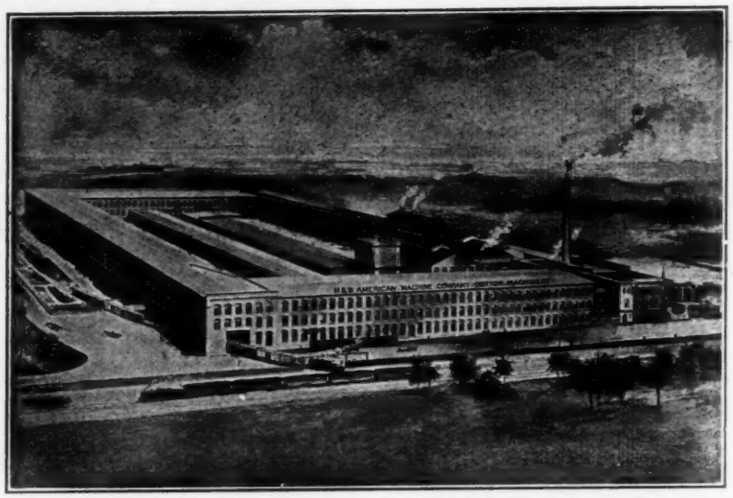
COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

Southern Single Warps.

8s	57		10s	61	@62
12s	62	@63	14s	65	@66
16s	67	@68	20s	65	@66
26s	79	@81	30s	89	@90
40s	84	@95			

Carpet and Upholstery Yarns in Skeins.

8-4 slack	54	@55	9-4 slack	55	@56
8-3-4 hard twist	51	@54			

Southern Two-Ply Skeins.

8s	55	@56	10s	58	@60
12s	61	@62	14s	61	@62
16s	62	@63	20s	74	@75
24s	80	@81	26s	85	@86
30s	90	@91	40s	98	@$1.00

Southern Two-Ply Warps.

8s	59	@60	10s	61	@62
12s	62	@63	14s	63	@64
16s	70	@72	20s	75	@76
24s	80	@81	26s	85	@86
30s	88	@90	40s	$1.05	@$1.10

Two-Ply Combed Peeler Skeins.

20s	95	@$1.00	24s	$1.05	@$1.10
30s	$1.15	@$1.20	40s	$1.40	@$1.50
50s	$1.55	@$1.65	60s	$1.70	@$1.80
70s	$2.00	@$2.10	80s	$2.40	@$2.45

Southern Frame Spun Carded Yarn on Cones.

8s	58	@60	10s	59	@62
12s	60	@63	14s	62	@65
16s	62	@65	18s	66	@67
20s	67	@68	22s	67	@68
24s	68	@69	26s	69	@71
30s	73	@74	40s	88	@89
30s tying-in	66	@68			

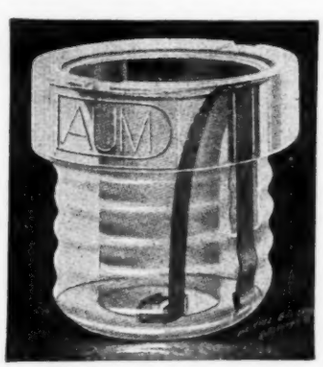
Northern Mule Spun Carded Yarn on Cones.

10s	61	@62	12s	62	@63
14s	63	@64	16s	64	@65
18s	65	@66	20s	66	@67
24s	71	@72	26s	74	@75
30s	80	@81	40s	90	@92

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	90	@91	12s	91	@92
14s	92	@93	16s	93	@94
18s	94	@95	20s	95	@96
22s	96	@97	26s	$1.05	@$1.10
30s	$1.05	@$1.10	36s	$1.15	@$1.20
40s	$1.30	@$1.35			

The accompanying illustration shows a new and simple refillable plug fuse, manufactured by A. F. Daum, 1157 Hodgkiss Street, Pittsburgh, Pennsylvania. The fuse is made entirely of porcelain and can be refilled in less than a minute without the use of tools. It is made in all sizes from 3 to 30 amperes 125 volts. The refill fuse strips are put up in boxes of 100 each in any amperage. The refilling of the fuse is a very simple operation. The fuse strip is



pushed in from the bottom and through the opening at the top of the porcelain, then pulled down the side and the point is bent in a slot near the bottom of the porcelain. Then the strip is pulled tight and the other end pushed in the plug, and the replacing of the mica finishes the job. The manufacturers of this fuse make removable fuses of every description.

Notes About Men You Know.

S. T. GARDINER, who has been connected with the Boston office of the Main Belting Company, has recently resigned to become manager of the southeastern district, comprised of the states of Virginia, West Virginia, North and South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama and Mississippi, with headquarters at 60 South Forsyth Street, Atlanta, for the Russell Manufacturing Company. Mr. Gardner comes to the South with a thorough knowledge of the application of their "Ruseo" belting to the needs of the textile and other great industries of the South.

R. M. MAULDIN has resigned his position as manager of the Greenville office of the Saco-Lowell Shops to become manager of the southern office of the J. Spencer Turner Company, Room 216, Commercial Bank Building, Charlotte, North Carolina. This change went into effect August 1st. Mr. Mauldin was connected with the Greenville office of Mr. J. E. Sirrine for a period of twelve years prior to being associated with the Saco-Lowell Shops. When Robert F. Bowe resigned from his position as manager of the Greenville office for the Saco-Lowell Shops to go with the Hunter Manufacturing and Commission Co., at New York in 1917, he was succeeded by Mr. Mauldin. Associated with Mr. Mauldin in the Greenville office of the Saco-Lowell Shops was Mr. Gayle who now succeeds Mr. Mauldin at the Greenville office.

SGT. FRANCIS E. HYDE, formerly of Company B, 341st Labor Battalion, has returned from France and been mustered out of the service. He has taken up his old position of carding and spinning at the Shady Lea Mill of the Rodman Manufacturing Company at Allenton, Rhode Island.

ALBERT J. OWLER, formerly employed by the B. B. & R. Knight Co., has also been mustered out of the government service and has accepted a position as superintendent of the North Scituate Mills at Scituate, Rhode Island.

ELLIS T. GURRY, of the 103rd Field Artillery which was a part of the Yankee Division, has been mustered out of the service and has commenced his duties as overseer of carding at the Charlton Mills, Fall River, Mass.

J. LAWRENCE IVERS has accepted the position of superintendent of the Maple Grove Mill of the Renfrew Manufacturing Company, at Adams, Mass. He was formerly employed by the Pemberton Mills, Lawrence, Mass., as overseer of all spinning, spooling, winding, reeling and twisting in both mills. Mr. Ivers graduated from the New Bedford Textile School in 1903, with a two-year course in cotton picking and carding. He is also a graduate of the Fall River Textile School, having finished a one-year course in spinning and warp preparation at that institution in 1904. In the past, Mr. Ivers has contributed several articles to COTTON, and is well known to many of its readers. Mr. Ivers has also made for himself an enviable reputation as a base ball club organizer and manager.

LIEUTENANT COLONEL J. FRANKLIN MCFADDEN has returned to this country after a year's service in France at the First Army Headquarters during the offensives in September and October. After the armistice he was at Tours, where he was made chief of the Leave Areas Bureau. He was decorated with the Legion of Honor by the French government, and promoted to the rank of lieutenant colonel. Colonel McFadden is a member of the firm of McFadden, Sands & Company, Philadelphia, cotton brokers.

A. T. GUY, overseer of the cloth room at F. W. Poe Manufacturing Company, Greenville, S. C., has been appointed superintendent of the plant to succeed F. Gordon Cobb, who resigned to become superintendent of the Lancaster (S. C.) Cotton Mills.

WILLIAM W. QUINTON has been promoted from overseer of weaving to assistant superintendent of the Nashua (N. H.) Manufacturing Company. He is succeeded as overseer of weaving by H. Wilson.

B. E. GEER, president of the Judson Mills, Greenville, S. C., has been elected president of the Alice and Easley Mills, Easley, S. C., to succeed his brother, the late John M. Geer.

C. E. GRAHAM, of Greenville, S. C., has been elected vice-president of the Alice Mills, Easley, S. C.

W. H. GEER, manager of the Easley (S. C.) Mills, has been elected vice-president. He will continue to act as manager.

B. M. BOWEN has resigned as overseer of carding at the Erwin Mills No. 4, West Durham, N. C., and accepted the position of superintendent of the Salisbury Cotton Mills, Salisbury, N. C.

E. E. ORRELL, manager of the Osage Manufacturing Company, Bessemer City, N. C., died recently at the Franklin Hotel. Death was due to apoplexy. Mr. Orrell was 65 years of age at the time of his death.

WILLIAM KING, who, until a short time ago was spinning overseer at the John P. King Mills, Augusta, Ga., died recently of complications of the heart.

W. F. ROGERS is now overseer of spinning at D. E. Converse Company, Glendale, S. C. He formerly held a similar position with the Arkwright Mills.

R. A. FOWLER, who has been machine erector for the Whitin Machine Company, Whitinsville, Mass., has accepted the position of superintendent of Conestee Mills, Greenville, S. C.

J. W. THOMAS, former overseer of carding at Arkwright Mills, Spartanburg, S. C., but more recently superintendent of the Norris Mills, Cateechee, S. C., has returned to his former position at Arkwright Mills.

L. A. KING has accepted the position of overseer of spinning and spooling, twisting and windings at the Jewel Cotton Mill, Thomasville, N. C.

R. H. DALLAS, who was overseer of spinning at Harmony Grove Mills, Commerce, Ga., has become overseer of

spinning, twisting, winding and spooling at L. H. Gilmer Company, Millen, Ga.

R. W. BINGHAM, formerly overseer of spinning at Springstein Mills, Chester, S. C., has accepted a position as overseer of spinning at Carhartt Mills No. 2, Rock Hill, S. C.

LEE RADFORD has been promoted from second hand to overseer of spinning at the Crawford (Ga.) Mills.

W. D. BALLARD has resigned as overseer of weaving, slashing and drawing-in at Roanoke Rapids, to accept the position of superintendent of the Pocahontas Cotton Mills, Petersburg, Va.

J. L. SCRUGGS, for nine years assistant superintendent of Republic Cotton Mills, Great Falls, S. C., is now superintendent of the Ivey Mills Company, Hickory, N. C., succeeding H. W. Warner, who recently resigned on account of ill health, after six years' service.

A. C. BROWN, formerly overseer of spinning in No. 2 Mill of Fulton Bag and Cotton Mills, Atlanta, Georgia, has succeeded R. H. Dallas as overseer of spinning in Harmony Grove Mill, Commerce, Georgia.

J. B. BEACHAM has accepted the position of superintendent with Johnson Manufacturing Company, North Charlotte, N. C. He was formerly superintendent of Kinston (N. C.) Cotton Mills.

ARTHUR F. DICKINSON has been appointed resident agent of the Lancaster Mills, Clinton, Mass. He succeeds William Tufts, resigned. Mr. Dickinson has been associated with Lockwood, Green & Co., of Boston, owners of the Lancaster Mills, for the past six years and has had a wide mill experience both in the North and South in the mills controlled by Lockwood, Greene & Company.

GEORGE W. ROBERTSON, superintendent of the Dan River division of the Riverside and Dan River Cotton Mills, Inc., Danville, Va., recently visited the Amoskeag Mills, at Manchester, N. H.

S. M. PETERSON, superintendent of the Mayo Mills, Mayodan, N. C., left on August 1st for a visit to Sweden, after an absence of thirty-two years, having left that country in 1887. He will be accompanied by his wife. After a visit to his old home and other parts of Europe, Mr. Peterson will return to this country where another responsible position is awaiting him.

S. B. TANNER, JR., of Charlotte, N. C., represents in North Carolina the South Atlantic Export Company, which is operating in connection with the South Atlantic Maritime Corporation to develop shipping of Southern exports through South Atlantic ports.

C. L. CARTER has succeeded J. M. Hodges, Jr., as superintendent of the Advance Manufacturing Company and Cape Fear Cotton Mills, at Fayetteville, N. C.

L. S. HALL has accepted the position of superintendent of the Greylock Mills, North Pownal, Vt.

LOUIS RESNICK has been appointed Director of Publicity by the National Safety Council, Chicago, Ill. He was founder and general manager of the Associated Trade Press, with which he was connected prior to going with the Safety Council. In addition to several years of specialization in trade publication work, Mr. Resnick for four years was connected with the Associated Press, first as editor of the night bureau at St. Louis, Mo., and later as editor of the West wires in the Central division of the A. P. at Chicago.

GEORGE F. RUTZLER, JR., has been appointed to represent L. Sonneborn Sons, Inc., of New York City, in North and South Carolina.

GUY S. HAMILTON, advertising manager of the American Steam Conveyor Corporation, Chicago, has been appointed editor of "The Booster," the corporation's newly established sales organ.

GEORGE W. WATSON has accepted a position with A. Klipstein & Co., of New York City, to travel Georgia, Alabama, Mississippi and Louisiana selling their products. Mr. Watson is an expert dyer and has also had considerable experience as a salesman.

J. E. GOING has accepted a position as overseer of carding and spinning at the Carolina Cotton and Woolen Mills, Fieldale, Va. He was formerly superintendent of the Arkwright Mills, Spartanburg, S. C.

J. V. MAUNEY has been promoted from second hand to overseer of the cloth room at Poe Manufacturing Company, Greenville, S. C.

C. H. GOODROE, of Rock Hill, S. C., has accepted the position of superintendent of the Osage Mills, Bessemer City, N. C.

B. J. DOBBINS has resigned as superintendent of the Highland Park Manufacturing Company, Charlotte, N. C., to become president and general manager of the Grace Cotton Mills, which have just been organized at Shelby, N. C.

W. R. TATTERSALL has resigned as superintendent of the Loray Mills, Gastonia, N. C., to accept a similar position with the Limestone and Hamrick Mills, Gaffney, S. C., succeeding E. R. Cash, who recently resigned to become manager of the newly organized Cash Mills, of the same place.

W. H. TAYLOR has accepted the position of resident engineer at the Republic Mills, Great Falls, S. C., succeeding W. H. Terrell, resigned.

S. H. STARK has been appointed general manager of the Couch Mills, East Point, Ga.

W. A. HENDERSON has accepted the position of general overseer of carding and spinning at Dresden Mills, East Lumberton, N. C.

BENJAMIN DAWSON HEATH, holder of extensive mill interests in North and South Carolina, died recently at his home in Charlotte, N. C., at the age of 70 years, following a period of declining health.

MORTON McI. DUKEHART and E. S. Denise, who compose the firm of Morton McI. Dukehart & Co., have been appointed by the American Steam Conveyor Corporation, of Chicago, as their representatives in Baltimore and the surrounding territory, which includes all of Maryland and the District of Columbia, and a few counties in Pennsylvania, Delaware, West Virginia and Virginia. Messrs. Dukehart and Denise are both power plant engineers of long standing and sales engineers of considerable ability.

JOSEPH L. GADBOIS has resigned his position at New Haven, Connecticut, and accepted a position as superintendent with the Bottum & Torrance Company of Bennington, Vermont. Incidentally, this mill has just added 12 machines, making their equipment 54 Scott & Williams machines on 200 needle plated half hose. Mr. Gadbois has a splendid reputation as a successful mill man and the usual excellent results will be forthcoming at his new plant.

A. M. WHELPLEY, southern sales director for the Kaustine Co., Inc., has moved his offices from 428 Candler Building, Atlanta, Ga., to Charlotte, N. C.

NEWPORT DYESTUFFS

MADE IN THE U. S. A. IMMEDIATELY AVAILABLE

We shall be glad to welcome you at the

FIFTH NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES

Chicago—Week of September 22nd, 1919.

Able selling force with offices geographically located

An efficient industrial and technical organization

Every manufacturing step from coal to dyestuffs being performed by us.

We manufacture an extensive line of colors, covering the entire textile field.

Uniform deliveries made possible by testing and standardizing every individual lot before shipment.

With no obligation on your part, our laboratories will match your samples and assist you in your dyeing problems.

NEWPORT CHEMICAL WORKS, INCORPORATED

PASSAIC, N. J.

WORKS—
Carrollville, Wis.
Passaic, N. J.

GENERAL OFFICES—
First National Bank Building,
Milwaukee, Wisconsin.

BRANCH SALES OFFICES—

Boston, Mass. Philadelphia, Pa. Greensboro, N. C. Chicago, Ill.

BLEACHERS!

Do you know how to bleach with Peroxide?

You are valuable in proportion to what you know.

We are ready to teach you Peroxide bleaching without expense, also improving your boiling and finishing.

The more you ask us the better we like it. Be ready for the call for "better bleached goods," which is sure to come.

The Roessler & Hasslacher Chemical Co.

New York, N. Y.

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

As to Prices on Filling Winders.

EDITOR COTTON:

In the August number of COTTON which has just been received, I have read over the very interesting article on tire fabric manufacture by "Johnson". This is very interesting reading and is information which I think will interest a great many people at the present time. There is one thing in particular in this article which I wish to write you about, same being a statement of price of machinery. The one special item being one filling winder 15 spindles $937.50. We would be pleased to furnish Mr. Johnson or any other party who would need a filling winder, a winder which has been adopted by practically all tire duck manufacturers in the North and is being use by a great many tire fabric manufacturers in the South, same being manufactured by us and has 20 spindles, and is sold at a cost of $650.00 for the 20 spindles, same includes a bunch builder for each spindle and for building the bunch on the bobbin which is essential on this class of work.

I thought it would do no harm to draw your attention to this, as the price of $937.50 seems to be a very high price for a filling winder of 15 spindles, and would be rather misleading to people who are in the market for such a machine.

Frederick Jackson, Southern Agent,
Universal Winding Company.

[We are glad to publish the letter from Mr. Jackson in reference to the price of filling winders as manufactured by the company he represents.—Editors.]

On the Labor Question.

EDITOR COTTON:

In regard to the "Moses" that has discovered a "panacea for all the ills" organized labor is heir to, in handling a corporation, industry, or business where labor is employed on the plan of the present form of our national government; with the congress composed of the employees; the senate of the foremen and officers; and the cabinet of the owners; I would like to ask in the first place, isn't it just a subterfuge? If not, and the congress has any real power, won't "Mr. Leitch," or the journal that is exploiting his plan, please point out one single instance where the government has made a financial success of any business it has undertaken, with the exception of collecting taxes for revenue?

I am not criticising, but want to know for information if all business the government has done or is doing would not fail if they did not have money coming in from other sources? If this is so, why would the above plan have any more chance or hope of financial success than the government? And can industry continue business unless it is a financial success?

Why not advise industry to follow the lead of the banks? It is seldom, if ever, that the banks don't make money, and their dealings, or rather their profits, are made public. Are not the banks required by law to make a sworn statement periodically of their financial condition and their books audited periodically by an auditor not connected with the bank? Besides, an expert employed by the government also examines their financial condition periodically, if they are national institutions.

The one thing that starts the anger of the worker and fans it to an ungovernable flame is the huge profits the labor agitator tells him is being made "off his labor." Wouldn't it be better to have the profits published periodically like the banks, and under government supervision? For no matter how great the profits may be, they are never so great as the labor agitator would and does have the employees believing. Base the wages on profits, out-turn, or any system chosen, and pay it either all in cash, part cash and profit sharing plans, bonus, stocks and bonds, insurance, living conditions, or any way that has proven successful, but by all means publish the progress of the business in such a way that the employees can understand, for secrecy always did breed suspicion, and suspicion is a fertile field for the dope of the labor agitator.

There have been numerous plans tried out, but none seem to be the remedy. The Overland Shops tried the "Profit Sharing Plan" and had one of the worst strikes in the country. Industries in San Francisco, Cal., have tried numerous plans and granted almost every demand of organized labor and yet, hasn't San Francisco had more strikes and less spreading out of industry than any other city of its size in the country? And shouldn't it be a lesson to both organized labor and city officials and show them that capital, neither great nor small, is going to do much building where the chances are about even that a strike will be called on them before the completion of the building and possibly a sympathetic strike called in all other business to enforce their demands?

Let us hear from others on this subject.

"Question" (Ala.)

The Economy Baler Company, Ann Arbor, Michigan, have recently sent out circulars descriptive of their all-steel fireproof Economy baling presses. The circulars give specifications and descriptions of all the different products of the company, which manufactures baling presses only. Among the balers shown are the top opening, side feed and open type balers. This company also makes heavy duty power driven metal compresses for the purpose of compressing scrap sheet steel, etc. The high density compress open type baler is designed specially for the recompressing of goods for export shipment. J. S. Hulme handles this equipment from Philadelphia southward. He maintains offices at 512 Arch Street, Philadelphia, and in the Empire Building, Atlanta.

Odd, Isn't It

—that some people think of advertising as a means of benefiting only the seller, when its basic function *must be* to render a necessary service to the buyer, else it could not exist. Merchandise lives or dies as it does or does not meet a human need. Advertising is subject to the same law of service. The real measure of its value is what it *gives*, not what it gets.

In the light of these truths, the marvelous growth of advertising in itself, is an impressive demonstration of its essential character in our economic system.

But you are not interested in *all* advertising any more than you are in all merchandise. That is one big reason why you have a highly specialized Business Paper in your field such as the one carrying this advertisement. It was born of your needs, not of any man's desire to be a publisher.

How It Works for You

What it does for you and your field editorially is self evident, but its *editorial* service is just as vital. Instead of a buyer having to depend upon gossip, hearsay and driblets of information from this or that source, he gets it all between two covers.

Timely, authoritive, comprehensive, statements about needed materials pass in review as the advertising pages are turned. Confident judgments can be formed, and intelligent decisions made.

Yet advertising is NOT an *added* expense, but an improved distributive process, which takes the place of slower, more costly and less efficient methods.

That is why it pays to *read* advertising even more than it pays to advertise. Especially if you read it in papers which have met the exacting requirements of membership in The Associated Business Papers, Inc., for one of its standards of practice requires that a paper must *decline any advertisement which has a tendency to mislead or which does not conform to business integrity.*

You are invited to consult us freely about Business Papers or Business Paper advertising

LIST OF MEMBERS

Each has subscribed to and is maintaining the highest standards of practice in their editorial and advertising service.

Advertising and Selling
American Architect
American Blacksmith
American Exporter
American Funeral Director
American Hatter
American Machinist
American Paint Journal
American Paint and Oil Dealer
American Printer
American School Board Journal
Architectural Record
Automobile Dealer and Repairer
Automobile Journal
Automotive Industries
Bakers Weekly
Boot and Shoe Recorder
Brick and Clay Record
Buildings and Building Management
Bulletin of Pharmacy
Canadian Grocer
Canadian Railway and Marine World
Cake and Ice Cream
Chemical & Metallurgical Eng'g
Clothier and Furnisher
Coal Age
Coal Trade Journal
COTTON
Concrete
Daily Iron Trade & Metal Market Report
Domestic Engineering
Dry Goods Economist
Drygoodsman
Dry Goods Reporter
Electric Railway Journal
Electrical Merchandising
Electrical Record
Electrical Review
Electrical World
Embalmer's Monthly
Engineering World
Engineering and Mining Journal
Engineering News-Record
Factory
Farm Machinery—Farm Power
Foundry (The)
Furniture Journal
Furniture Manufacturer and Artisan
Furniture Merchant's Trade Journal
Gas Age
Gas Record
Grand Rapids Furniture Record

LIST OF MEMBERS
(Continued)

Haberdasher
Hardware Age
Heating and Ventilating Magazine
Hide and Leather
Hotel Monthly
Illustrated Milliner
Implement and Tractor Age
Industrial Arts Magazine
Inland Printer
Iron Age
Iron Trade Review
Lumber
Lumber Trade Journal
Lumber World Review
Manufacturers' Record
Manufacturing Jeweler
Marine Engineering
Marine Review
Metal Worker, Plumber and Steam Fitter
Mining and Scientific Press
Millinery Trade Review
Mill Supplies
Modern Hospital
Motor Age
Motorcycle and Bicycle Illustrated
Motor Truck
Motor World
National Builder
National Druggist
National Petroleum News
Nautical Gazette
Northwestern Druggist
Nugent's, The Garment Weekly
Power
Power Boating
Power Plant Engineering
Price Current—Grain Reporter
Railway Age
Railway Electrical Engineer
Railway Maintenance Engineer
Railway Mechanical Engineer
Railway Signal Engineer
Retail Lumberman
Rubber Age
Shoe Findings
Shoe and Leather Reporter
Shoe Retailer
SOUTHERN ENGINEER
Southern Hardware and Implement Journal
Sporting Goods Dealer
Starchroom Laundry Journal
Tea and Coffee Trade Journal
Textile World Journal
Timberman
Transfer and Storage
Twin City Commercial Bulletin
Woodworker

THE ASSOCIATED BUSINESS PAPERS, Inc.

JESSE H. NEAL, EXECUTIVE SECRETARY.

HEADQUARTERS 220 West 42nd Street NEW YORK CITY

Reduce the Waste.

EDITOR COTTON:

The question of waste in any department of the cotton mill is of great importance, and not infrequently the success or failure of the mill depends upon the system carried out, especially in the weave room.

The proper method of steaming the filling is the last matter that is considered, but where this item is well systematized, it will be found a waste saver. The waste question in the weaving department is no doubt more important than in any other part of the mill. The chief reason why this is true is because of the increased value of the cotton and yarn at this stage of manufacture. Again, the increased value of the cotton and yarn since the beginning of the war should be considered. Let the slogan be "save yarn first."

The chief reason why the bulk of the waste in the weaving comes from the filling (especially when it is cop filling and where there is an excessive amount) is due in most cases to the stabbing of the cops. Most mill managers claim that it is due to the lax methods of the weavers, or the want of proper discipline on the part of the overseer. Granted that the above is true, why is it that there is more waste from the cop filling than from the bobbin filling? The reason is because the filling is given to the weavers in a humid condition, which causes the tube in the cop to offer much resistance to the reception of the spindle, owing to the tube being humid or damp. This is easily proven by removing a cop from the spindle at the mule, and then wetting the spindle slightly and replacing the cop. It will be found a hard thing to do, that is, to have the cop occupy as low a position on the spindle as before it was removed. Examine a cop from the mule before it is steamed, and you will find the tube in the cop formed by the spindle in the same condition as it left the spindle. Examine it after steaming, and it will be found difficult to see clear through the tube. When a weaver is given filling in such a condition nothing else can be expected than an excess of waste.

Of course, I am willing to admit that pulling the filling from the cop or bobbin at every change of the shuttle is too often carried to such an extent that very much good yarn goes into the waste box that should be interlaced in cloth. But where there is an excessive amount of waste it is usually due to the lax methods of steaming the filling, and then not allowing it to cool before it is given to the weavers.

In some mills the cause is due to having only a limited amount of filling boxes, and the filling is given to the weavers in this condition so that the filling boxes will be emptied quickly and the mules will not have to wait for boxes at doffing time. A very poor practice and if the management realized how much it cost them they would soon order the necessary amount of filling boxes to give ample time for the cooling of the filling.

Filling should be steamed slowly, and not boiled as is done in some mills. Because the weavers are waiting for filling, is no reason why the steam should be turned on full force, and the filling boiled for a short time, and when hot taken to the weaver. What is the loss or gain by such a practice? The mill may get off a larger production. The weaver may make a few cents more. But what about the loss in waste?

It has been the vogue in most mills to use one kind of stock for both warp and filling. In the mills where the trouble described is found, the strong, harsh fibres are used for the warp yarn, and for the filling, only soft, pliable fibres are chosen. Besides, all the waste is mixed in the filling mixing.

No mill manager should expect as much production from the mule room or from the filling ring frames when such stock is used because a greater amount of twist must be inserted in the yarn. Practical mill men know that when the filling yarn lacks the necessary amount of twist the spinners will take off a certain number of weights from the presser fallers in order to ease up on the yarn. This, of course, prevents many ends from coming down, which makes it easier for the mule spinner, besides enabling him to take off a greater production of yarn, which means more pay for less work—at the expense of the weaver and the mill.

When the necessary amount of weight is removed from the presser fallers, the coils are not laid as close to one another, consequently, the diameter of the cop is larger and the cop softer. And, too, owing to the lack of weight on the ends, the coils do not lock themselves at the nose of the cop, and the result is the production of a soft nosed cop. What else can be expected from a cop of such construction but waste? Soft twisted yarn is more affected than yarn having the necessary amount of turns to the inch when steamed, and the diameter of the cop is again increased.

The weaving cost is greater than the cost of all other preceding departments. Therefore, favor the weaving. What is saved in the card or spinning rooms may prove costly in the weaving department.

I look for quality in the processes preceding the weaving, and for production in the weaving, and I find this gives the largest dividends.

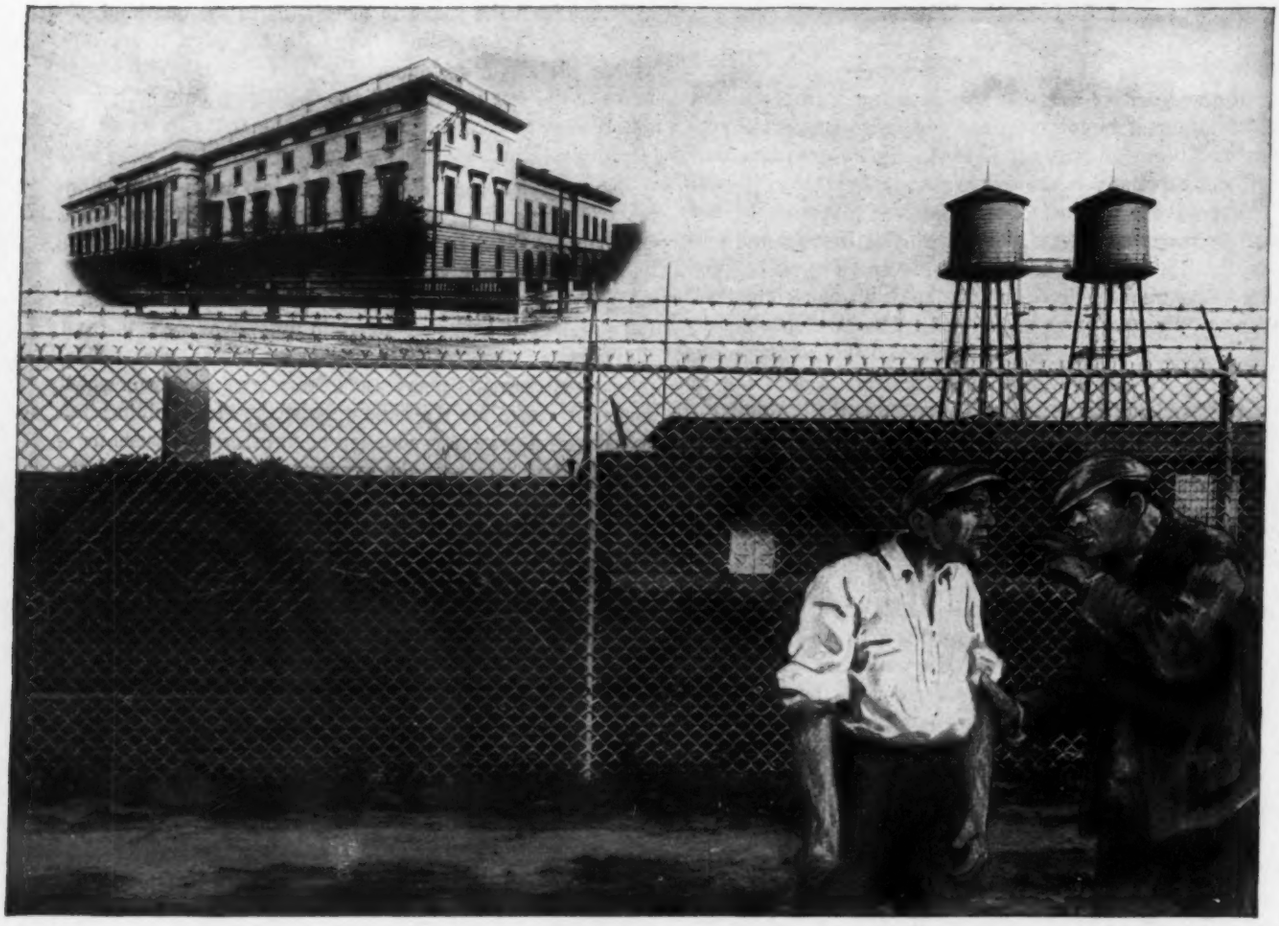
We are selling our filling yarn at 72 cents per pound. The average mill of 50,000 spindles, 1200 looms, will make about 240 pounds of waste. At this writing, we get 11¼ cents a pound for clean thread waste, which includes the cop waste. 72—11.25=.6075. Let us assume that we save 30 pounds. 30×.60¾=$18.23. See how easy it is to save. Try it.

It is true that in some mills the waste is kept down to a minimum, however, it must be admitted that in some mills conditions exist as described in this letter and a great saving can be made. Wash. (N. H.)

An electrical apparatus for detecting small power losses and so determining the efficiency of gears has recently been perfected by C. M. Allen, professor of hydraulic engineering at the Worcester Polytechnic Institute.

A number of tests was made with this apparatus to determine the best sort of gear lubricant. The best results were obtained with a mixture of heavy oil and flake graphite. With a perfect blending of the oil and graphite, there was a minimum loss through friction.

The Glen Raven (N. C.) Cotton Mills have let a contract to the Sanitary Engineering Company of Charlotte, for the installation of sanitary sewage disposal outfits at each of the operatives' homes in their village.



"Might as well try to break into the Mint, Bo."

An Anchor Post Chain Link Woven Steel Factory Fence discourages the most desperate evil doers—defeats their most carefully laid plans of entrance. It is the insurmountable obstacle that halts theft and destruction before it begins.

Day, night, Sunday, holidays, year in, year out, it guards with equal strength at all points. It is the protective force that keeps wrong doers at a safe distance.

Anchor Post Factory Fences do not sag, lose their alignment nor collapse. They are held rigid and erect on firmly anchored posts and are protected against the destructive effects of time and the elements by a thick coating of spelter.

Our catalog is interesting and goes into detail about Anchor Post Factory Fences.

ANCHOR POST IRON WORKS

ATLANTA, GA., OFFICE---Empire Bldg. **NEW YORK OFFICE---165 Broadway**

Philadelphia, Pa., Real Estate Trust Bldg. Cleveland, O., Guardian Bldg. Hartford, Conn., 902 Main St.
Boston, Mass., 79 Milk St. Chicago, Ill., Edison Bldg.

Anchor Post Fences

2256-G

Ten Rules for Overseers and Others.

1—*Be Fair.*
Have no favorites and no scapegoats. An overseer has to act as judge many times every day, therefore, he must be just.

2—*Make Few Promises and Keep Them.*
An overseer must be exact in this particular. Sometimes an overseer forgets that his job requires a high standard of truth and honor.

3—*Don't Waste Anger. Use It.*
Anger is the most valuable thing and should not be used carelessly. Keep your most forceful language for special occasions. Before an overseer can control others successfully he must control himself.

4—*Always Hear the Other Side.*
Never blame a worker until he has been given a chance to give his point of view.

5—*Don't Hold Spite. Forgive.*
When you have had to scold a worker, go to him later, in a friendly way. There should always be blue sky and sunshine after a storm.

6—*Never Show Discouragement.*
Never let yourself be beaten. An overseer must have perseverance and never say die.

7—*Notice Good Work as Well as Bad.*
Mingle praise and blame. Let the workers see that you can appreciate as well as condemn.

8—*Watch for Aptitudes.*
Take a keen human interest in your workers. Notice them. Study them. Put each one where he can do best.

9—*Be An Optimist.*
Don't let your worries and troubles deform you into a pessimist. Inspire confidence. Put the "righto!" spirit into the works. Say: "Come along, men; all together!"

10—*Take Your Full Share of the Blame.*
This is the most difficult of all. It is heroic. But the overseer who can share both blame and praise with his workers will have discovered the secret of managing his men.

W. L. BEYER, SUPT. COCHRAN COTTON MILLS, COCHRAN, GA.

Stanley Belting Again on the Market.

The signing of peace at Versailles and resumption in Great Britain of peaceful manufacturing activities has been followed by the announcement that Stanley solid woven cotton belting is again available for use in the United States.

Stanley, a cotton belt of special weave, has virtually been off the market since the beginning of hostilities. A supply was available in this country at that time, but when that was exhausted little effort was made by the Stanley Belting Corporation of Chicago, the American distributors, to increase their market. This was due partly to the fact that the mills where the belting is made were turned over to the British Government for war work, and partly to the difficulty of shipment, the result of the scarcity of ships and to Germany's unrestricted submarine campaign.

It is interesting to note in connection with the announcement, that the signing of peace marks a new epoch in the history of the concern which has been engaged in the manufacture of Stanley solid woven cotton belting for more than a hundred years. The original Frank Stuart Sandeman was a weaver of cloth. His home at Stanley, in the gateway of the Scottish Highlands, was the center of the weaving industry for which the Scots have been famous for centuries. But when the exploitation of the Scots' forests began, he turned his attention to belting. The fact that the Scots pin their faith in woven goods, coupled with the damp atmosphere of the country, was responsible for the development of the belt as it exists today. The special weave was developed after extensive experiment and looms were designed and built. Finally when the work of preparation was complete, Sandeman sent teams through the country bringing the Scottish farmers and shepherds to work in his mill. They came by families, settling at Stanley on the Tay River, the site picked because of its water power facilities.

Many of the descendants of these original employees still are employed at the Stanley Mills and at the Manhattan Mills operated by the company at Dundee. The process and the works still are in the possession of the descendents of the original Sandeman, the firm now operating under the name of Frank Stuart Sandeman & Sons.

The mill at Stanley, having discarded the water power long ago, now is one of the most modern textile mills in the world, every piece of machinery, every manufacturing method is the last word in modernity. The mill virtually "owns" the town of Stanley. Electric current, generated at the Stanley plant lights the town—one of the few towns of its size in Scotland, by the way, having electrically illuminated streets. Children of the workers are educated at schools built by the company; an athletic field by Stanley furnishes recreation and even the jail is the property of the Stanley Mills.

With England speeding up her industries under the pressure of war, the Stanley Mills for the last four years have been extremely busy filling war contracts for Stanley belting. Not in the factories only, but in the field as well the belting was used by the Government in enormous quantities.

Before the war its use was scarcely less general in the United States and even during hostilities Stanley found it possible to keep his old customers supplied. Now however, with large supplies again available it will be possible to fill new orders for the solid woven cotton belt which could not be filled before.

A Slasher Difficulty.

EDITOR COTTON:

What causes the warp yarn to break at the loom? Such breakage has been carefully watched and, in most cases, found to result largely from knots and bunches and other causes rather than from weakness. Many tests have been made from time to time by mill men, and it has been found that even when the warp yarn is breaking at standard weight and free from knots and bunches, it can be weakened to a large extent in the methods of operation.

In most all cotton mills the breakage of the warp yarn at the loom is laid to the treasurer of the mill for buying poor stock, or to the carder and spinner. We hear very little about the slasher boss, but this is a place where the yarn may be weakened during operation.

Loss of elasticity is the chief cause of warp yarn breaking at the loom, and this continues to prevail because there is not the right amount of stretch on the yarn between

The Mechanical Weather Man Says:

"In more than two hundred of the finest Textile Mills in this country and Canada, Carrier apparatus is making

"Every Day a *Good* Day"

by *manufacturing* weather to order.

Bulletin 103-C will tell you the story. It's gratis, upon request.

Write Right Now

Carrier AIR CONDITIONING AND DRYING EQUIPMENT

Carrier Engineering Corporation

Carrier AIR CONDITIONING AND DRYING EQUIPMENT

Manufacturers of Weather
Humidification, Heating, Cooling, Ventilation, Purification
39 Cortlandt Street, New York

Boston Buffalo Chicago Philadelphia

the size rolls and the drag roll. It is admitted by mill men that if the warp yarn is stretched when wet it loses its elasticity, a feature all warp yarn must retain, because this yarn is largely governed by the usefulness of its application, and by its liability to break in the loom.

A good slasher tender is to a weave room what a good grinder is to a card room, because any neglect on the part of the grinder can be felt for weeks afterwards, and the same statement can be applied to the slasher tender. Slasher tenders should watch at all times the percentage of stretch between the size rolls and drag roll. There should always be a slight continuous amount of stretching, but not too much. When too little or no stretching exists on the yarn between the size rolls and drag roll, the yarn does not hug the cylinder as it should, and a portion of the yarn is not dried as it should be at the slasher, but dries on the loom beam instead, and then the ends are matted together to such an extent that when the matted portion comes under the action of the lease rod many ends will break. On the other hand, if too much stretch exists between the size rolls and drag roll, the yarn is stretched when wet, and loses much of its elasticity.

As the warp threads are pulled out of line by the harnesses lifting and lowering, a certain amount of strain comes on almost all the warp ends at each lift of the harnesses, and if the warp ends have no elasticity or the vibrator is set to follow the movement of the harnesses, the ends are continually breaking, but more with a snap than in the first case. For this reason, the side shaft was adopted to drive the different parts, so that the size rolls will deliver the same amount of yarn as that taken up by the drag roll.

It was formerly a custom to have the yarn turn the cylinder, but it was soon discovered that in doing so the elasticity in the yarn was almost lost. When a slasher tender changes the size roll cloth or cover, he should be careful and put all his knowledge and skill on the job, because he should understand and know that if this roll is not properly covered too much starch will follow the yarn, and in a short time there will be trouble. Slasher tenders should always give the covering of this roll due attention as a layer or two of cloth without taking the thickness of the cloth into consideration will frequently cause trouble.

One good rule that will minimize this trouble is always to have the drag roll three-sixteenths of an inch larger in diameter than the size rolls. Wash. (N. H.)

The 1919 edition of the Official American Textile Directory has just been issued by the publishers. The directory contains 500 new mills and there are 136 old mills that have changed hands during the past year. About 4,000 mills have made changes in their reports. The mill reports are grouped alphabetically under the cities and states in which they are located. In addition, there is a classified list of mills arranged according to their product, list of selling agents, dealers in raw materials, export houses, and other auxiliary lines having to do with the textile trade. It is illustrated by nineteen textile maps, and is published in three editions, viz.: the Standard Edition, $3.00; Office, $4.00; Vest Pocket Edition, $1.50 per section (3 in set). This directory may be obtained either through COTTON or direct from the publishers, The Bragdon, Lord & Nagle Company, New York.

A bath tub that provides clean, comfortable and sanitary bathing accommodations for any room in the house, with hot and cold water, with no plumbing fixtures, and, when not in use, may be folded up as easy as shutting a cupboard door and stored away in some unused corner or closet, is being manufactured by the Rowe Sanitary Manufacturing Company, Detroit, Michigan. The accompanying

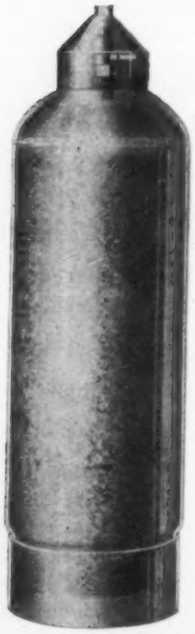
photograph shows this new bath tub, known as the Ro-San rolling bath tub, ready for use. The fixture consists of a heavily enameled white metal tub and a heater tank which holds twelve gallons of water and is finished in brilliant nickel plate. The heater tank may be heated by gas, gasoline or oil. The frame is made of wood, finished in white enamel to match the tub. Six feet of garden hose are furnished and the waste water may be run directly outdoors through the hose. This company also manufactures Ro-San indoor closets and Ro-San washstand. All three products are being used extensively in farm and rural homes and communities. The latter two are in use in farm school houses where plumbing facilities are not available.

The American Steam Conveyor Corporation has just announced the appointment of H. S. Valentine as sales engineer in charge of Philadelphia territory. An office has been established in the North American Building, Philadelphia. Mr. Valentine is an experienced mechanical engineer and was connected with the Link-Belt Company of Philadelphia for five and one-half years, with the Brown Hoisting Machine Company and Yale and Towne Mfg. Company for six years, and with the Badenhausen Company, boilers, for one year.

Offices of the R. M. Sims Company have been opened at 1316-1317 Empire Building, Atlanta, Ga. This company will conduct a general cotton seed products business. The offices will be under the management of Mr. R. M. Sims, who is very well known to the trade, having formerly managed the Atlanta office of the Young Commission Company, and more recently been associated with A. K. Burrow, of the DuPont interests of Memphis, Tenn.

The Stafford Company, Readville, Mass., manufacturers of the well known "Ideal" automatic looms, have recently found it necessary to build an addition to their plant in order to take care of their rapidly increasing business. The construction of the plant is now under way. The Stafford products are well known to southern mill men. The southern agent of the company is J. H. Mayes, Independence Building, Charlotte, N. C.

COMMERCIAL ACETYLENE



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Commercial Acetylene Gas can always be relied upon. It comes in portable cylinders of the following sizes:

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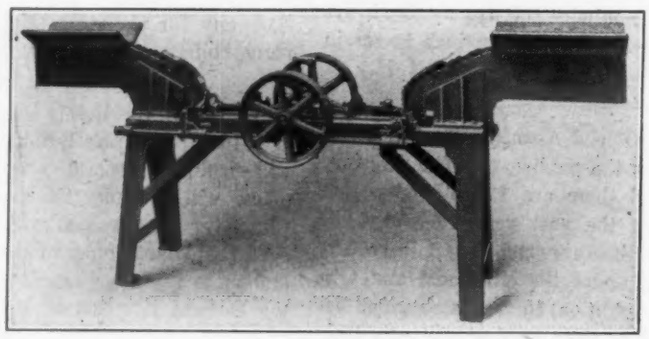

The Single End Utsman does just what the Double End does in the same way. It is for smaller mills.

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The Terrell Machine Company, Inc.
Charlotte, N. C.

Vaulting the Wall of Custom.

BY BURTON H. ALLBEE.

A Glance at the Export Opportunities of the Present and the Possibilities for the Future.

Nothing recorded in the history of the world so upset the activities and operations which function in normal times as the great war just ended. Not only was the normal life of every community in the principal countries of the world disrupted, but trade channels were changed, or clogged so that they have not yet been re-opened. Old trade routes were closed, some of them perhaps forever. New routes were opened, which, if they stand the test of the reawakened commercial sense, may remain as a permanent part of the new business fabric of the nations. Few comprehend, as yet, the tremendous upheaval which has taken place in the past five years. Fewer still appreciate the full significance of this upheaval.

American manufacturers, regardless of their particular products, have heretofore been disposed to confine their operations to their own country. They have been fortunate in living in a land which was beginning the most marvelous development in history. It was hardly necessary for them to go far afield in order to secure markets for their manufactures. Generally they could hardly satisfy their home requirements. What other nations might want was of little moment to them. In other words, they were so happily situated with relation to their output and sales that their export trade was little more than a convenient means for disposing of their surplus after they supplied their home market.

Unquestionably this feeling concerning exports was fostered to some extent by foreign manufacturers. It may be reasonably supposed that they had no particular desire to see the young country of the West, with its unexampled resources and its genius for converting raw material into finished products in a way hitherto unknown, enter the markets which for centuries had been their own, though they welcomed such goods as they could not make and needed in their own development. They were quite ready to take raw materials and convert them into goods of their own manufacture and send them here where they were usually able to secure good prices and few questions asked about quality. In fact, the export market was not thought well of by many of the great manufacturers of America.

Perhaps it is useless to discuss further reasons. The principal one has already been stated, the fact that the home market was so large it absorbed substantially everything that could be made. Beyond that the American manufacturer scarcely looked. Perhaps in a vague sort of way he realized that some time his own country might be overloaded with goods and that he might then require a market abroad, but this was such a remote contingency that he didn't permit it to trouble him, or influence him in his plans for the future.

These observations apply in a general way to all manufacturers. Perhaps cotton goods makers were less guilty of neglect in securing export outlets than almost all others. Their cousins in the silk trade refused to seek foreign business then, and with the exception of a few leaders they are still refusing to seek it. They still adhere to the original statement of American manufacturers, that export business is not needed. They say they have sufficient trade in this country to occupy their mills. They say they see no reason why they should seek business abroad under such conditions and they are not doing it. Whether the policy is sound or not remains to be seen. But they believe that

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ONE REASON WHY AMERICAN MILLS CAN COMPETE IN THE MARKETS OF THE WORLD.

At the left is shown a weave room in a cotton mill at Malaga, Spain. The plain looms need many more operatives per section than are required in the weave room of the South Carolina Mill shown at the right where the equipment consists of automatic looms.

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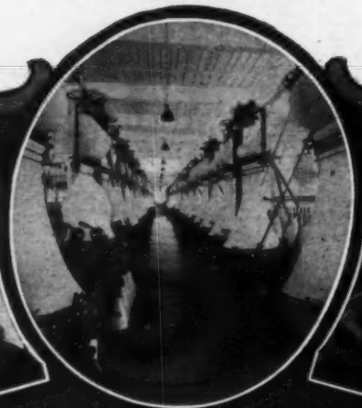

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the answer to this supposition is so far in the future that really it doesn't matter what they do and they, therefore, elect to sell at home and ignore foreign trade possibilities.

Apparently cotton men are not quite so much in favor of relying upon their own country for their business. According to reports of several large houses, who have an extensive export trade, their business with foreign nations was never so great as it is now, and it appears to be growing all the time. Every day increased orders are received, and some of them are from such remote points that it will require a long time before satisfactory trade arrangements can be perfected. But leaving out of consideration the new markets which have opened as a result of the war, one may learn that the old markets are expanding more rapidly than they have ever done before. Those nations, like China, for example, which formerly bought great quantities of American cotton cloth, and whose trade declined for a time, are today buying more than they did before the war and information from there is to the effect that they will buy still more in the years to come. And this is not a supposition. It is a fact. Cotton manufacturers understand the value of this growth and are making plans to insure the business for years in the future.

Reference to China recalls that within the past few weeks information has come of the awakening in the Far East and of numerous inquiries which are coming from there regarding cotton goods and the possibilities of securing such grades and at such prices as those countries require. Some of this business is new. Some of it is a continuation of the trade which began before the war.

Take that portion of the world of which Indo-China is the center. It has an area eighty per cent as large as the United States and its population is approximately four times the population of this country. That great market for cotton goods is open for the trade in the United States. The people want cotton goods of a certain type which can be made here satisfactorily, and the quantities they need and will buy are beyond computation. No other nation stands in exactly the same relation to them that the United States does, and if present policies are continued the American people can secure and hold a large share of that trade.

Glance for a moment at Russia. While the country is now in a chaotic condition and no one knows what is transpiring there, the fact remains that it has a population of nearly 200,000,000, all of whom use more or less cotton cloth of various qualities. Ultimately Russia will settle its difficulties and enter again into commercial relations with other peoples. It has less reason to distrust the United States than any other power and the opportunities for building up a great export business will be astounding when they are known. Even now a representative of the Bolsheviki is reported to be in this country with $20,000,000 to spend on goods to be shipped to Russia.

Few seem to appreciate the potentialities of Russia, but that is because they refuse to look beyond the present troubles, of which they actually know nothing. These misunderstandings will not always last and some time in the near future the country will come into the markets of the world to buy. Cotton cloth is a necessity in their households as it is everywhere and they will buy liberally of the character of goods they need in their ordinary daily life.

China is a market which is already friendly disposed toward American producers. The Chinese look upon America as their friend and they are quite ready to offer a great volume of trade to our cotton manufacturers. The character of the goods they want is well known here since our manufacturers have supplied more or less to China in years past. Therefore, it is merely a matter of expanding a business with which manufacturers are already familiar, although it must now be against Japanese competition. It is not breaking into new territory whose inhabitants may be more or less prejudiced against a stranger. Our manufacturers have only to send their goods into a country of friends where they have been distributed before.

South America has been much discussed, and is much discussed, today. Its potential business is, of course, great, but South America is not the market now, and it will not be for many years to come, that the East is. The population of South America is sparse. It is a continent of great possibilities since its natural resources are enormous and practically untouched. But its population is proportionately so small that in the very nature of things it cannot be a liberal buyer. The trade is well worth fostering not alone for present returns, but because of the possibilities of the future. To make friends now, when trade is small, and through those friends multiply the trade many times over in the coming years, is the essence of commercial wisdom. Cotton manufacturers are following this plan in some degree, though sometimes their efforts seem to be afflicted with a species of hesitancy which does not promise well for the future.

These are some of the high spots in the opportunities for export development. They are a bare outline only and are introduced merely to point a moral. Few realize the tremendous chances which are offered by the great populations of other parts of the globe. True, some of these nations are reported to be poor. It is said they cannot buy because they have not the money, but it must be remembered that a great nation, regardless of whether it is wealthy according to Occidental standards, must still be a great market. Financial arrangements can be made whereby sales can be made safely All of these nations have financial resources, and these resources will increase.

Our difficulty in the past has been that we followed Washington's policy of isolation. They call it splendid isolation, yet perhaps that is a misleading term. Our nation never realized that it was a sharer in the benefits which are derived from associative effort, regardless of whether this effort is exercised by individuals or nations. The development of the resources of our own land has engaged all our energies and has required all our capital up to the present. But we have taken a definite place in the sisterhood of states of the world and with that should come a wider share in the business of the associated nations. It is not a political matter and does not involve us in something which we do not want. It leads instead, inevitably, to the development of our already growing trade. It is the beginning of our adequate share in the commerce of the world.

It is possible to give long tables of statistics showing how many dollars worth have gone to this or that nation. But it is not only those features of the situation that are interesting. It is the impulse, the awakening of the desire to develop trade with those great countries. It is getting the vision which is essential if manufacturers are to develop a business of this sort that is needed. A narrow vision, limited to the confines of our own land does not help much about building up export trade. It is the look beyond, the desire to break away from the limiting ring that helps. It is the inspiration of the man who wants to climb the moun-

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The only bearing that takes thrust loads on absolutely correct principles is the *ball type.*

The highest expression of the ball bearing for thrust loads is the New Departure Double Row. Here, two rows of balls run with angular lines of contact, so inclined that combinations of radial and thrust loads are carried through the points of contact.

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Linking Warper with Balling Attachment

tains around him and from their summits look out upon a new world.

That is exactly what manufacturers are doing today. To their credit it can be said with emphasis that not a business in the country has caught this broadened vision more hopefully than the cotton trade. They are reaching out, searching for new markets, developing old ones, undertaking new ventures in a pioneering spirit and withal preparing for the great trade era to come. It does require vision. It requires energy and it requires a large share of the pioneering spirit which has made America what it is. Manufacturers in the past years have grown extremely cautious. They have hesitated to take any chance. They have looked upon their own field as unlimited and have not endeavored to discover what lay beyond the mountains that hemmed in their own valley.

But the great war has stimulated the imaginations of men. It has shown them that there are vast opportunities for commercial development in a rejuvenated world wherein all men are equal and wherein the masses have an opportunity to make of themselves something besides mere puppets. They see the dawn of a new day, a day in which the commercial elements of the population will be able to reach out farther than they have ever done before and secure a greater share in the development of the life to come than they have in the past. They look out on the nations with their teeming millions and see in them the potential purchasers of unimagined quantities of honestly made goods, sold at honest prices. And seeing this they say that some of that future development must come to America. They are unwilling that the older portions of the world shall obtain all this. They want some for the manufacturers of this country. Realizing that they must exert their own energies to obtain it they are ready to undertake such pioneering work as is required. Every country is under survey now. Every nation is being sounded as to its requirements and its ability to buy. Every land is receiving more or less attention from American manufacturers. The trade is there and if the inspiration is strong enough America will yet enjoy a large share in this great new development of the world which will be, in effect, its rehabilitation after the greatest cataclysm in history. Fortunately the cotton trade of America is awake to its opportunities and its efforts thus far have been fraught with beneficial consequences. It is going over the rim of the mountains which have heretofore hemmed in its activity and it sees the world ready and eager to buy of a nation that makes honest goods and sells them at honest prices.

Thomas O. Morgan, until recently head of the Service Department of the New York office of the American Steam Conveyor Corporation has been promoted to the position of sales engineer. He will handle Long Island and Connecticut territory. Mr. Morgan's sound experience in service work has been a splendid training for his new responsibilities and his customers are assured of receiving authoritative advice on correct ash disposal engineering.

The Sanitary Engineering Company of Charlotte, N. C., have been awarded contract for the installation of septic tank sewage disposal outfits at each of the operatives' homes in the Hardin Manufacturing Co.'s village at Worth, N. C.

Reducing Labor Turnover.

(*Continued from page 705.*)

appointed time. It was impossible to locate them so as to learn the reason of not coming to work.

Questions 4, 5 and 6 have much bearing on the matter, as help supporting others are, as a rule, steadier workers, and those having other workers in the family are more desirable as it starts a community of interest and gives more help for the mill per tenement or cottage.

Questions 7, 8, 9 and 10 come in as very important. Men have unintentionally hired help away from their best friends—unintentionally simply because they did not acquaint themselves with the facts as to whether they were working or not, and in what mills. Corporations having several mills have been found to be hiring help from one mill to the other, and creating bad feeling which would not have occurred if the questions had been asked. Owing to the fact that the man who did not learn what pay his applicant had been earning in his former job, help has been hired and become dissatisfied and started trouble which should never have taken place, if good judgment had been the order of things.

Questions 11, 12, 13, 14 and 15 are very important. It makes a vast difference as to whether a person has been in several mills only a few weeks at a time, or whether in very few mills a reasonable length of time. If the reasons given for desiring to change are on account of discord and various disagreeable circumstances, it can be put down as a good reason to expect that this hand will have trouble most anywhere. A good way to talk to people of this kind is that there is no employment in your mill for workers who do not remain a long time.

Questions 16, 17, 18 and 19 are sociological ones, leading the employer to become better acquainted with his workers, and making him better able to help them to settle down comfortably.

By asking question 20, it can be learned whether a hand can substitute efficiently if occasion requires.

Questions 21 and 22 often reveal secrets that one would never dream of. Help have often taken a new job without having any idea of working steadily, and perhaps knowing well that they could not hold out long on a hard job. And by doing this, a person of sounder health may have been side-tracked for the weaker one.

Question 23 is another eye-opener. In one case a man had good musical talent and could paint portraits. This man was a very valuable man to the plant. He made friends for himself and the mill by giving liberally of his time to sing, play and gifts of his sketches to the help. While in another case, a man with similar talents was so busy working for himself outside of the mill hours, and during mill hours, that his own work went to the bad. Many an overseer has lost his job because he persisted in doing business on the side.

Questions 24 to 29 are clannish ones. Digging into the personality of applicants with these questions, the employer will often find some queer motives in the makeup of the person wanting employment at a particular mill, and in a particular part of a department.

Questions 30 and 31 are sensible ones, but they are "stickers" for people who have deceived their principals in various places.

Question 32. The reason why so many people drop out

without working a notice is that they are so rarely impressed with this matter at the time of engagement. Whatever is not mentioned and agreed upon at the time of engagemnt is generally repudiated by the person hired. But whatever is agreed upon between the employer and the employee at the time of engagement is more likely to appeal to the honor of the employee. No matter how depraved help may appear to be, or actually be, it should be understood that there is a spot of honor in every person which can be reached by the employer who is willing to dig deep enough to find it. And it is just in proportion as a man is willing to work hard to find this point of honor and to build strongly around it that his success as an employer will be consummated. Men who know help and manage them properly, also know that there is a larger sense of honor among workers than is generally understood by those who do not study the question thoroughly.

The suggestive question No. 33 is only a fair consideration. It is the golden rule of hiring help. It is second only to highway robbery to induce another's help away by any hook or crook which cannot be based on an honorable foundation and legitimate dealing. All help should be encouraged to give the other fellow a fair notice before leaving, and to do his work *right*, up to the last moment of leaving the company.

Russia as a Cotton Consumer.

Cotton manufacturing in Russia dates back to a comparatively early period, the times of the Moscow Tsars (seventeenth century), but began to be of serious industrial importance only in the latter part of the last century. Russia's seventeenth century cotton manufacture was largely confined to dyeing or printing goods imported from Asiatic countries. In the eighteenth century weaving mills were started, but these used imported yarn. The first cotton spinning mill was established in 1808 and by 1840 the number had increased to twenty. According to *Russia*, a magazine published by R. Martens & Company, of New York, fifty per cent of the Russian cotton consumption in 1910 was grown in Central Asia, and later figures show Russia occupying the fourth place as a world cotton manufacturer. Even then the Russian peasant principally grew and spun flax for home consumption, pre-war figures showing that Russia produced practically ninety per cent of the world's flax.

As to today's position, it is almost impossible to give a true picture, but from information secured by people in close touch with Russian conditions, we are led to believe that the cultivation of cotton in Central Asia has, owing to the disorganized and chaotic condition of Russia, been neglected down to a minimum. In the cotton spinning districts of Lodz (Poland) and Moscow (the former being in the hands of Germany, and the latter being run very spasmodically owing to the industrial unrest caused by Bolshevism) there was no money forthcoming for the growing of cotton, and therefore no encouragement offered to the growers for production. Furthermore, these cotton growing districts had to rely for their food supply upon other parts of Russia, and owing to the breakdown of transportation this food did not come forth, with the result that instead of cotton, most of the people had to go into the cultivation of the soil for bread producing purposes.

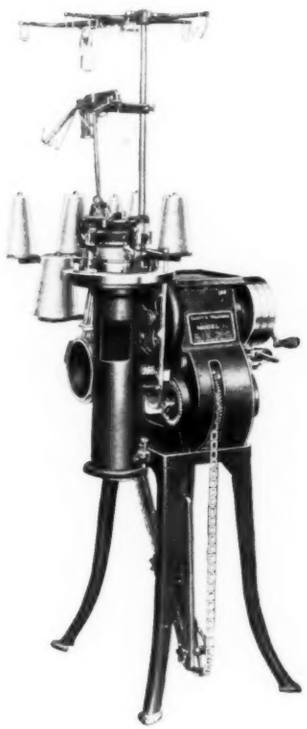
Another factor must also be taken into consideration, and that is that Russia was a very large importer of raw cotton as well as of manufactured cotton articles before the war. The cotton imported during the war was principally used for army purposes and the importation of manufactured cotton articles went down to next to nothing. The result is that the stocks of manufactured cotton, as indicated by data referred to, are practically gone, so that for many years to come Russia is bound to be a large buyer of cotton textiles of any grade and quality. This is accentuated by the further fact that her flax growing has also been considerably upset, with the result that not thirty per cent of the pre-war quantities of flax are grown. A considerable shortage of linen, which sooner or later must be substituted therefor by cotton goods, seems to be the future situation.

While the quantity of cotton textiles required by the 190,000,000 people of Russia will be immense, owing to the foregoing factors, yet one must take into consideration the dislocated state the railways and all transportation facilities are in, and that consequently only a comparatively small quantity of the country's requirements will be able to be shipped. For the time being and until such a time as the interior condition of Russia rectifies itself, the following districts could be immediately approached by salesmen with the view of doing a certain amount of trade Primarily Archangel and Vladivostok, as these districts are in the hands of the Allied troops. Later on, order will probably be established in Finland. In any cases the demand, while great, will be slow in gaining headway either for the raw staple or the finished goods.

The textile manufacturers of Zaragoza in central Spain petitioned the official cotton committee for permission to run their mills six work days of the week for the reason that this is necessary to complete contracts made before the publication of the decree limiting the workings days. The textile manufacturers of Andalucia made a similar request, whereas those of other regions do not require more than four days of obligatory work, leaving the remainder of the week for voluntary work. Accordingly a royal order, published December 3, 1918, authorizes the cotton committee to permit work during six days of the week, converting into days of voluntary labor those which were officially reduced.

The Joseph Dixon Crucible Co., Jersey City, N. J., has issued a new booklet "Graphite for the Boiler" which tells in a clear and concise way how to make boiler cleaning easy. The unusual part of this little booklet is that it does not claim that boiler scale can be entirely prevented but that it can be made easy to remove. This frankness on the part of the manufacturer is worthy of consideration. It indicates a willingness to cooperate with engineers in the practical solution of this problem. An interesting table is included in this booklet which shows the extra cost of coal due to the various thicknesses of scale present in boilers. The manufacturers will be glad to send a copy of this booklet to anyone who is interested.

KNITTING SECTION



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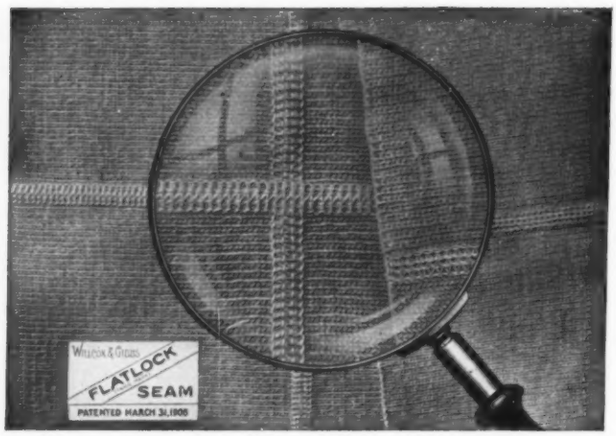

An absolutely flat seam.
A locked seam
A strong seam
An elastic seam
A thin seam
A friendly seam
An ornamental seam

(Illustration shows you its construction)

So many lines of knit underwear are being manufactured that the experienced buyer in picking the wheat from the chaff chooses a line that is made with the *Flatlock* Seam.

There must be a reason. The *Flatlock* Seam is the best Seam in the world because it has the points of superiority noted at the left.

The *Flatlock* Seam is a selling feature that manufacturer, wholesaler, jobber and retailer can use---one that the retail customer will appreciate if rightly emphasized.

We are proud of the *Flatlock* Seam and justly so, being sustained by the knowledge that nearly 300 manufacturers in the United States, Great Britain and Canada are using the *Flatlock* Seam in the manufacture of their trade-marked lines.

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The Knit Goods Market

The drive for a lowering of the cost of living, through methods yet to be worked out, has had the effect of inspiring a greater degree of caution. This is evidenced in the determination to defer so long as possible the reinstating of lines which for the time are off the market pending an upward revision of prices, and a movement among some mills to restrict sales to even shorter periods than in the last few months.

So far as can be ascertained, manufacturers are standing firm in the belief that prices must advance, because of the labor situation, prospective railroad complications and continual increases in wages. No decline in the volume of business is thought of, as there never was so much money and labor never was better paid. In one of the New York savings banks the deposits increased $15,000,000 on the first six months of this year, and none of the accounts of depositors exceeds $3,000, an indication that the great majority are in the low or moderate salary class. At no time have collections been better. Merchandise is going over retail counters about as fast as dealers can get it, and from wholesaler and retailer the demand is for more as rapidly as it can be delivered.

Except as to infants' lines, hosiery has not been opened for spring. Duplicate business in underwear for the current season has been suspiciously light, forcing the conclusion that stocks are light. There remains therefore a large volume of business for the remainder of the year, and it is no idle prediction that deliveries will fall short of demand and, probably, will be below purchases, for it is the current rumor that some of the weaker mills have committed themselves for deliveries which they may not be able to make, in view of labor shortage and radical increases in operating costs since lively selling began with the first return to a price level consistent with actual values.

Enormous quantities of underwear for Spring have been sold, and the belief prevails that a considerable number of manufacturers have not bought against more than 25 per cent of their sales, with yarns apparently in the ascendency. Fear on the part of distributors that some mills may have oversold or faced losses doubtless led some buyers to place protective orders.

With export business increasing, it does not look as though there can be any surplus of knit goods. For the first eight months of the year most mills, according to high authority, have had but a six-months' output at the best, considering the time that was lost through shut-downs early in the spring and strikes. There is, therefore, a shortage of 25 per cent to begin with, and this probably will not be overcome during the remainder of the year.

While the market, more especially in relation to hosiery, lacks the briskness which prevailed throughout July, it does not seem that prices can go in any direction but upward. First, because of supplies being under demand, and further, for the reason that goods sold early in the year and which have since been delivered or are going through now, show little profit, a fact which has led manufacturers to protect themselves against a repetition of what has occurred since prices were named. In the interim there have been increasing costs that were not contemplated six months ago. Wages and yarns have advanced beyond all calculations.

The only hope of lower prices, regardless of what may be accomplished by Washington authorities, must lie in increased production, on which the best thought of manufacturer and distributor is being focused. Greater output will have to extend to yarns, however, before there can be realized the ambitions of those elements engaged in the undertaking to reduce cost to the consumer while increasing it at the source. For illustration, manufactures of mercerized yarns.

Some interests look for a decline in silk, which might operate to bring about a reaction in mercerized. But there seems nothing on which to base a prediction that silk will show any material recession. As a matter of fact, it is no higher relatively than any other commodity, and at the moment there are prospects for a higher level of prices for mercerized hosiery. Women's 220 needle are selling to jobbers at and around $4.75 for mock fashion, some sales being reported at a quarter to a half-dollar under and a few at a quarter more. Leading factors say the price for spring, unless yarns break, will be $5 to $5.25. A manufacturer of women's 260 needle mercerized makes the prediction that the spring price to jobbers will be nearer $7 than $6. At the present cost of yarn, he says, they would show no profit to the manufacturer if sold at less than $6.75.

A line of seamless shaped mercerized for women that formerly was in the retail 50-cent class, for some time has been going to the consumer at 75 cents, and it is expected to sell for a dollar a pair next spring. High prices of silks are forcing mercerized lines up to near the price of full fashioned silks prior to the war.

Mercerized half hose still are a good proposition around $3.75 for mills making strictly high grade goods, and as much as $4 has been paid. Retail stores are getting 50 cents for half hose. It is expected the socks will advance to the 65-cent class, where they will come into competition with artificial silk plated on mercerized. It is the fear of this seeming uneven competition that is keeping half hose at the comparatively low price.

A mill in which cost accounting has been reduced to a fine art figures that mercerized socks made from 50s 2-ply at $2.15 will have to sell at the mill at better than $3.75 to show a profit for the manufacturer. If the accountant's figures be correct it is apparent that half hose made from yarn bought at the present price could not be sold under $4.

A line of ladies' 260 needle lisle—not mercerized—has sold in the last week at $5.50, and it is stated sales have been made at $5.75.

A Pennsylvania mill is getting $7.50 from jobbers for its silk half hose, the line ranking better than the average. Women's mercerized top full fashioned silks selling at $7.50 in 1914 are going to jobbers at $18 and there are not enough to go around. A woman's all-silk full fashioned which sold a year ago at $18 is a ready seller at $27.50, and here again there is a scarcity. So long as the situation in silks continues there will be no relief from the high prices of mercerized.

High prices for all lines, the attitude of labor and uncertainty of what will be the outcome of the efforts of the administration to bring down the cost of living have made the market notably sensitive.

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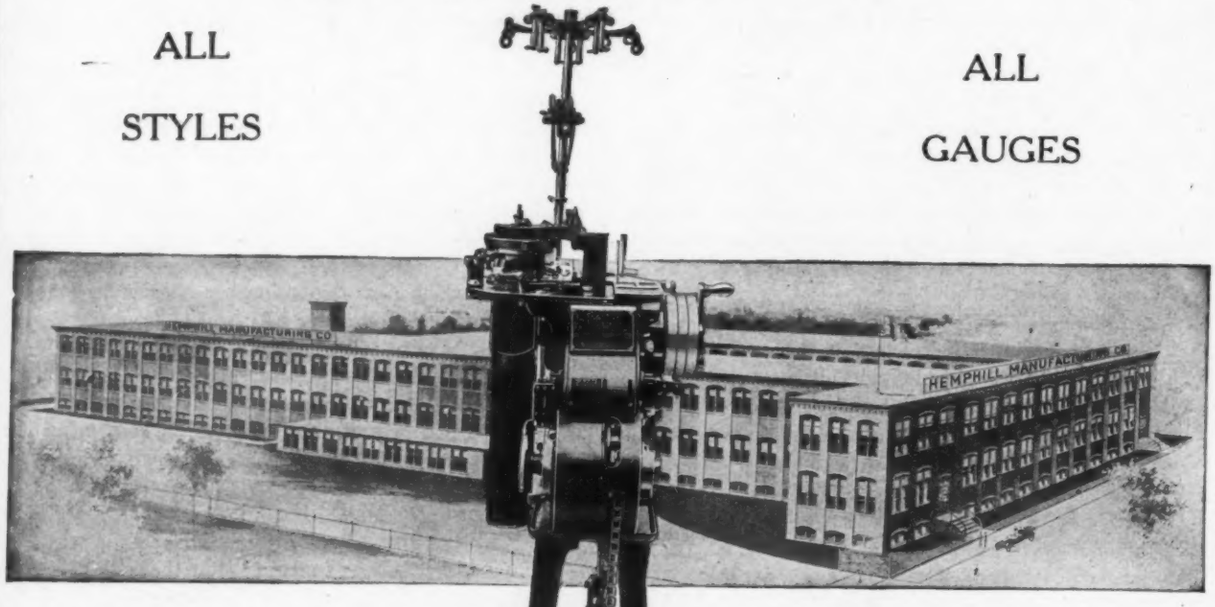

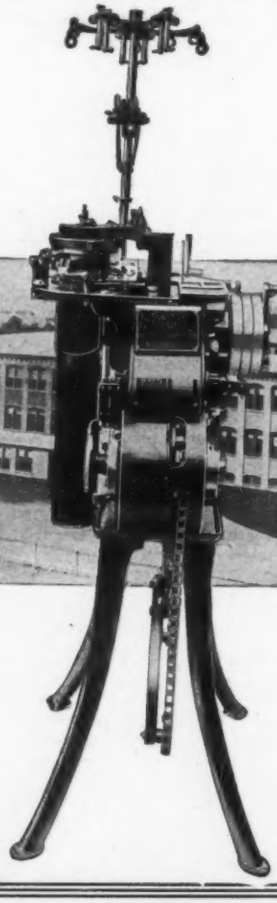

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In the circumstances there will be no hesitancy about selling for spring. Underwear, as stated, has been bought heavily, buying being well under way before the market felt the effect of proposed railroad legislation and measures intended to alleviate distress from high prices. Hosiery is holding tight, and with few exceptions mills will not name prices for deliveries next year until there is substantial evidence of restabilitation. Both manufacturer and jobber are, for the time, wary on future commitments. Demand continues strong, however, for spot merchandise.

It is significant of the market quiet that there is spotty demand and evidence of more to come. A New York establishment selling the hosiery output of several very large mills late in August booked two orders aggregating 40,000 dozens, proof of which is not absent. Another house in the same city has a buyer for 50 cases of ladies' 6-pound vests and drawers for immediate and 150 cases for January-February delivery. A company handling general lines is trying to find some mill willing to sell 50 cases of cotton bathing suits for spot delivery and 150 cases additional for the first quarter of 1920.

There is multiplication of evidence of scarcity of many lines of knit goods. A jobber recently paid $4.50 a dozen for ladies' 220 needle mercerized and billed them out to a customer at $4.25 to complete an order. He had oversold, apparently believing that when he bought mercerized under $4 he was paying the peak price.

Another jobber in the last two weeks invoiced to a retailer ladies' 18-inch artificial silk boot stockings at $6.50 for which he had to pay $6.75. He, too, had underestimated demand and misjudged price trend when he bought earlier in the year. Incidents of this character are not rare. And almost daily it is shown in spot transactions that stocks in distributors' hands are light.

This was not the case when the armistice was signed. Both wholesaler and retailer were well stocked. Now the reverse is true. Retailers have been selling as fast as the goods could be delivered. They are operating now from hand to mouth.

In the present lull there are none of the elements on which the fear of the early part of the year was based. At that time a surplus of labor, with the return of the men in the service, was regarded imminent. No such fear exists now. On the contrary, there is alarm that there will not be help sufficient, particularly in view of the gradual reductions in working time.

The full force of demand is brought home to merchants when they come to filling out their assortments. On the surface it would appear business since the middle of August in some hosiery lines has been taking a rest. And this really has been the fact. Operators are sensitive to every turn. For illustration, a well known mill had a small stock lot of ladies' mercerized of a very popular type and went among a few New York jobbers to whom the line was offered at 15 cents a dozen above the price named some months ago for present delivery, but 90 cents under what will be the price for the last three months of the year. All bought gladly. On the following day cotton went off about five dollars a bale. Within 24 hours one of the jobbers, directing the attention of the mill representatives to the decline in cotton, intimated very broadly that he supposed he would be entitled to a rebate from the price of the stockings.

The seller, in reply, reminded his customer that there was no relation between cotton and the yarns from which the stockings are made, that yarn prices were advancing. This was satisfactory, but the jobber came back with the assumption that "if the market goes down, of course you will take care of us."

Another jobber, who was buying heavily of underwear for Spring, was given the suggestion that perhaps he was not buying wisely. "What would you do," he was asked, "if there were to be a decline?" "Well," he replied, "I guess I would do what the other jobbers do. You know what they did last spring. I guess I would do the same thing again."

There is evident a feeling that extreme caution ought to be observed, and this is by no means confined to distributors, manufacturers being even less eager to sell than merchants are to get merchandise. In sweaters advance deliveries are being called for, and this applies to most lines of hosiery.

The question arises, suppose some government board investigating as to high prices were to reach the conclusion that there had been profiteering in fine counts of yarn, notably mercerized, and order a reduction, what would be the effect on mills' contracts with spinners, and what might be the attitude of merchants towards orders in process or on which deliveries had been delayed?

Whether the hosiery market is or is not quiet, logically it ought to be, and for the safety of mill and distributor there ought to be no pushing out of merchandise or buying beyond requirements until after congress has enacted legislation on railroads and the demand of the railroad brotherhoods for wage increases or lower cost of living has been disposed of finally. Even then, the trade ought to be willing to wait for the effect of what seems likely to be a compromise. Whatever the outcome of the efforts at mollifying the agitators in the movement for making it possible to maintain present incomes from labor and reduce cost at the source, it is expected that any intervening lull will be followed by spirited buying at value prices.

Leaving out of consideration the salaried professional and semi-professional classes, wages and living costs are not so seriously out of line as to warrant the agitation for adjustment, as is disclosed in the report of the National Industrial Conference Board making comparisons of July, 1914, and July, 1919, which says: "The cost of living for American wage earners was 71 per cent higher for July, 1919, than at the outbreak of the world war in 1914. Food advanced 85 per cent; shelter, 28; clothing, 100; fuel, heat and light, 57; sundries, 63. This distribution is based on studies of the expenditures of a large number of families made by the United States Bureau of Labor Statistics."

In the circumstances it must be assumed that the figures are as nearly accurate as any estimate that might be presented. It probably will be admitted that since July, 1914, wages, for all except the professional and semi-professional classes, have advanced fully 100 per cent—considerably more in many lines of employment. It would seem, therefore, that the element of earners making the most noise is better off than before the war.

The large jobbing houses, notably Marshall Field &Co., and the John V. Farwell Company, who in recent trade letters spoke of an excess of distribution as in contrast with the corresponding period of last year, and the necessity for increasing production, appear very optimistic, the prevailing opinion evidently being that present conservative operations will be followed by another spurt. Several large dis-

tributors having underwear orders in process have placed additional business for spring, necessitating purchases of yarns well into the first quarter of 1920. A Pennsylvania manufacturer bought 30s single southern frame spun carded at 75 cents only a few weeks ago. This is an exceptional case, northern yarn houses stating that very few knitting manufacturers are buying beyond December.

While underwear prices for spring have not been officially named, there probably is not a light weight mill that is not sold up for all it can make in the remaining four months of 1919. As to heavy weights, much remains to be bought for filling in for the current season, and future buyers are in a fair way to feel regret that their purchases were postponed when the market became overcast by a stray cloud.

There is no basis for contradiction of the assertion that 16-pound union suits have been sold too low—in some instances at $12.50 to $13.50—and that with cotton yarns remaining at or about present price levels, will have to be moved up for the tail end of the season. Seven-pound shirts, and drawers, too, have not been fetching a price commensurate with cost. What probably will happen to heavy weights may be said to be forecast by price movements in men's bal-briggans for Spring, which are commanding $5 to $5.25, against $1.75 normally and $3.50 to $3.75 in January last.

A union suit that sold normally at $3 now is $9, and ladies' vests, 60 cents in 1914, have gotten up to $1.37½, and it is stated that newcomers will have to pay $1.65. A ladies' union which five years ago sold to jobbers at $1.90 reaches them now at $4.67½, if bought quite recently.

Fleeced underwear in commission house hands is being held for advancing prices. One dealer recently refused to quote, although fairly well supplied. He is known to be holding for $11.50, which is one dollar above the market. A line of women's six-pound fleeces, sold normally at $3.75, are quoted at $9.

Underwear buyers who are in the market are puzzled that they cannot get prices on hosiery for spring, while light weight underwear is being sold freely, and some of them have felt that there is some sort of understanding among hosiery manufacturers for holding prices back so long as possible. Their conjecture is wrong. The naming of spring prices is being deferred no less out of consideration for the jobber than the safety of the manufacturer.

Sweater mills mostly are sold well ahead in practically the entire range. Buyers are clamoring for advance deliveries and are flocking the trade centers for odd lots for piecing out. There has been some complaint from jobbers over the request from manufacturers that they consent to a 10 per cent increase in order prices, to compensate mills for the extraordinary wage advances which had to be made after prices had been named, if mills were to be kept in operation. Some of the jobbers yielded gracefully, and there are few that, if they know their orders could not be filled at the original price, would not pay the advance. The distributing trade is looking forward to a bumper winter in sweaters. This division of the knitting industry is perhaps in as favorable a position as is the underwear division so far as spring is concerned.

Low end cotton hosiery, for men and women, is maintaining the prices established about the first of the month, women's 176 needle, 1½-pound selling in small quantity at $1.50, a like price being obtained for half hose of the same gauge. One line of 176 needle socks, two-thread throughout, is commanding $1.60.

Misses' coarse gauge ribs hover around $2, it being possible occasionally to pick up fragmentary lots as low as $1.85. But the line is not being offered in any great quantity. One mill is holding boys' 3-pound ribs at $2.80, in this instance on size 7, rise 10 cents, fall five. The same mill is slightly under the higher price named on misses' coarse gauge. A stock lot of 2-pound 84 needle half hose is available to jobbers at $1.82½.

First hands note a phenomenal demand for workmen's socks, of the 84 needle type, of which there is a short supply.

Wool half hose is practically sold up everywhere for Fall, buyers complaining that they are unable to locate mills willing to book additional business.

Very strong numbers are light weight wool—more properly speaking, cashmere—hose for men and women, large quantities of which are wanted for export. Some very heavy export orders have been placed quite recently. It is stated this class of goods is wanted for Greece and southern Russia.

Hosiery exports for June showed a great jump over May, amounting to 899,432 dozens of cotton, valued at $2,525,300, and 203,048 dozens of artificial silk, valued at $1,175,304. The totals by months are: May, 689,382 dozens, valued at $2,242,914; June, 1,102,480 dozens, valued at $3,700,604. The increase for June was 413,098 in dozens and $1,457,690 in value.

While cotton hosiery can be imported into England only under license, that country, as in May, was the largest taker in June, the imports from the United States for the latter month being 150,183 dozens of cotton and 95,757 dozens of artificial silk. Next in quantity was Denmark, to which country there were exported 147,325 dozens of cotton and 31,487 dozens of artificial silk. Other countries taking in excess of 5,000 dozens of cotton and 2,000 dozens of artificial silk were the following, the first figures given representing cotton and the latter artificial silk: Belgium, 22,177 and 10,077; France, 12,777; Netherlands, 17,003 and 2,092; Norway, 56,173; Sweden, 53,083 and 2,000; Turkey in Europe, 32,598 and 5,885; Canada, 59,538 and 6,352; Mexico, 18,269; Cuba, 42,046 and 3,378; Dominican Republic, 6,368; Argentina, 77,964 and 15,114; Brazil, 5,446; Peru, 8,858; Uruguay, 12,545; China, 11,941; Russia in Asia, 5,095; Australia, 77,270 and 17,036; New Zealand, 4,573 and 5,521; Philippine Islands, 6,465; British South Africa, 8,248.

There is developing considerable interest in prospective trade with Germany, and three prominent operators are known to have sent representatives across the Rhine. On the first day after the removal of restrictions on trading with Germany large jobbers in Chemnitz and Coblenz cabled an Eastern mill for samples and prices. Since then similar requests have been received by a number of manufacturers. One German concern writes: "We believe your goods to be very suitable for the German market." The letter is accompanied by excellent references as to financial standing. Another German house writes:

"Following Lord Leverhulme's motto, 'Trade and industries know no frontiers and speak one language only,' we offer our services as sole selling agents for Germany and Central Europe. We grew up among the knitting industries, and are in the very prime of life and full of energy, feel sure of being able to attain golden results, and would

ask you to consider our million dollars per annum proposal."

A Middle States hosiery manufacturer is more interested in preparations for competing with Germany in the markets of the United States than establishing a business in Germany.

A British buyer for several weeks has been going into every corner of the hosiery market, being interested chiefly in women's artificial silk goods. He is also buying knitting machinery. Another machinery buyer who has been cultivating the acquaintance of manufacturers here is accredited to France, although, it is suspected, what he is looking for is intended for Germany.

The outlook for an enormous export trade is more than promising, but too much importance must not be attached to the figures for May and June, for the shipments in those months were of merchandise which had been in New York for a long time awaiting transportation.

Considerable hosiery yet to be delivered this year will show far less profit to mills than was figured when prices were named, based on the then cost of dyeing and half-dozen paper cartons at $3.50 per 100. Since then the cartons have been twice advanced, until now they cost the mill $5 and dyeing is up full five cents per pound for sulphur black, with a prospect that it will go higher, for, it is understood, dyehouse employees in an eastern city are out for an increase in wages, contending for 85 cents an hour.

It is found there is a wide variation in the prices of commercial dyehouses in two cities separated by less than 100 miles. In one city the charge is 20 cents for sulphur black, while in the other it is 11 cents. In the first city referred to 22 cents is being paid for cordovan, and in the other 16. A manufacturer who maintains a dyehouse states his cost of dyeing sulphur black is less than eight cents a pound. Many manufacturers fear that if the Longworth Bill becomes a law there will be a possibility of a dye monopoly and that dyeing then might cost them considerably more than if there be no commission to prevent the buying of dyes in the open market, subject even to such tariff duties as congress may establish.

Aside from increases in dyeing cost and the higher prices that must be paid for cartons, knit goods prices should advance with yarns and the inability to obtain sufficient quantity to keep machinery operating. In two mills there is an aggregate of 211 machines idle because of delay in delivery of 26s combed peeler. Another mill last week was quoted six cents above the price of less than a month ago for yarn for tops and toes of women's mercerized hosiery.

Loopers in one city where the top price is 18 cents are are out for an advance of 22 to 25 cents for 20 to 22 point looping, and one large mill, it is stated, shortly will be paying the latter price, judging from the attitude of its loopers.

In anticipation of labor shortage and delayed yarn deliveries, some manufacturers are giving more attention to order forms, calling for signed orders carrying a provision calculated to protect mills against a repetition of the embarrassments that became quite common during war demand. The new order form of a southern mill carries the following:

"The conditions of this order are: This order is accepted with the understanding that we shall not be liable if we shall be unable to fill this order in whole or in part through inability to secure materials, supplies or labor, or for some cause beyond our control.

"Each delivery stands as a separate sale. Failure to ship any delivery on time shall in no respect vitiate the remaining installments nor constitute cause for the cancellation of these later installments.

"Any claim that quality of goods is not in accordance with terms of contract shall not constitute a cause for cancellation of contract or any part thereof. Complaints as to quality must be made in writing within 15 days from time of delivery of any goods, and seller has the privilege of replacing within reasonable time any goods agreed upon as not conforming to this contract.

"Failure of buyer to pay any installments as and when due entitles seller to refuse further deliveries."

Attached to the order is the following addressed to the buyer:

"We are enclosing herewith two copies of your order as same is recorded on our books. If you find this order to be correctly entered, kindly sign the white sheet and return to us, so as to complete our records. If there is anything wrong in the way in which this order is entered, let us hear from you at once, as otherwise your order will be placed as per copy."

The form is regarded by buyers as of a character that would not be accepted ordinarily, but tolerated in the present market by merchants with a reputation for taking unfair advantage of sellers in a declining market, as these are finding it difficult to obtain merchandise at any price except under an absolutely binding contract protecting sellers.

While it is to be expected that a few financially weak or easily frightened manufacturers might be willing to let their product go at less than actual value in the absence of the confidence of a month ago, the disposition all along the line is to sit tight. Some manufacturers are exacting signed irrevocable orders from customers, regardless of their financial strength or their reputation for regarding an order a contract that is not to be evaded. There is abundant excuse for every precaution.

It should not be forgotten that about the middle of 1918 the government had contracts with 400 knitting mills for 118,000,000 shirts and drawers, 83,000,000,000 pairs of stockings, 28,000,000,000 pairs of knitted gloves and 14,000,000,000 pairs of woolen puttees. That the government estimated beyond its needs—which was excusable at the time—is shown by the inventory of recent date, accounting for nearly 42,000,000 pieces of underwear and 17,000,000,000 pairs of stockings in stock, to be sold probably abroad.

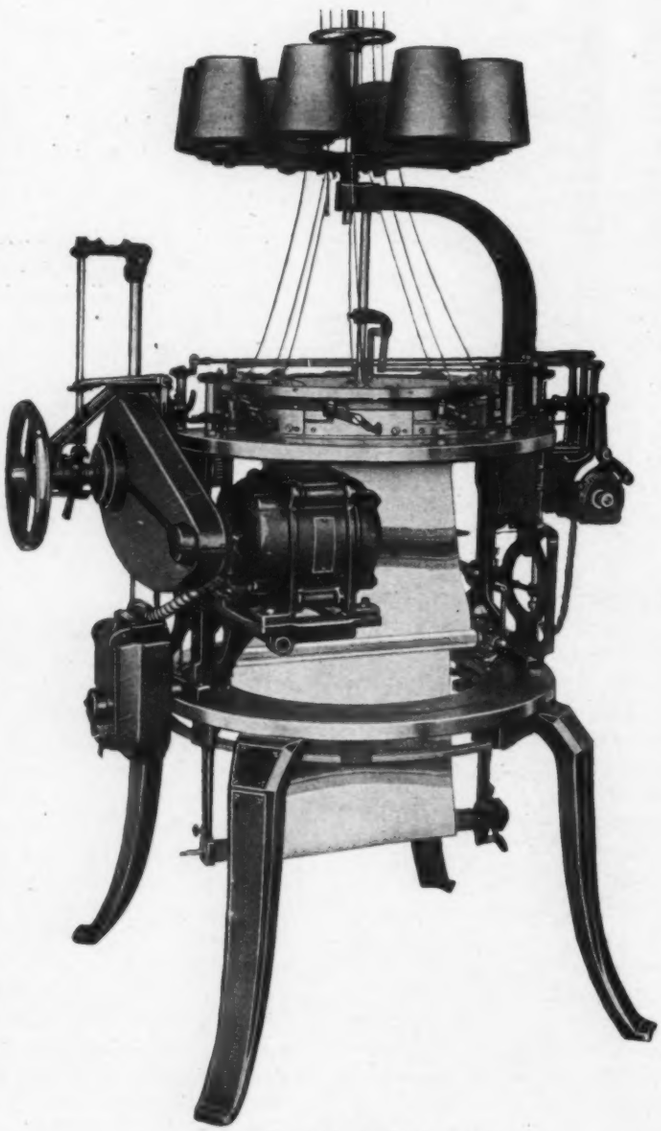
Then in January last came the demand for the jobbers for a guarantee from manufacturers against reductions of their prices, a proposal in which a few mills acquiesced. The cessation of hostilities and the action of the jobbers were two turns against which manufacturers could not have provided, although all knew that what happened was certain to happen some day. And they are not unmindful that something may happen soon again to disturb the trade equilibrium. Hence the need for caution.

A jobber who apparently has no fears as to the future was in the market late in August. He came from Fort Smith, Ark., and, while dazed at the high prices and the attitude of mills generally, bought at a rate indicating his absolute confidence. He wanted goods right away, for, he said, the retailers had about cleaned him out of stock.

It having been brought to the attention of the National Association of Hosiery and Underwear Manufacturers that several intermediaries engaged in export trade had been guilty of questionable practices, calculated to cause distrust of American knitting interests among foreign buyers, the executive board of the association adopted the following:

Resolved, That it is the sense of this association that a carefully prepared classified list of all reputable manufacturers, selling agents and commission merchants in the United States be compiled and filed with the Bureau of Foreign and Domestic Commerce or elsewhere, and that the list be made available for use by merchants throughout the world, such list to be subject to periodical revision by the Secretary of this Association, and which list shall contain only the names of those who signify in writing their willingness to sub-

Wildman Motor Drive



Drive on Bathing Suit Machine
Back View.

Look this drive over, and then go out in your knitting room and form a mental picture of how it would look if all the machines were equipped with Individual Motors. Dangerous belts and unsightly line shafts done away with, bettering the light and adding to the convenience of the knitting department.

But the improved appearance of the knitting room is not the only advantage. The motor drive increases the production of the machines 10 to 15%, as the loss due to belt slippage is entirely done away with.

The drive can be attached to a Wildman Belt Driven Machine in a half hour's time, by simply taking out the old side and slipping in the new drive complete. No drilling or tapping is necessary.

WILDMAN MFG. CO.

ESTABLISHED 1889 **NORRISTOWN, PA.**

mit any disputes or claims of any nature arising out of any transactions between them and foreign merchants to a board of arbitration consisting of seven members to be mutually agreed upon by the parties directly interested; said arbitrators to be selected and to act only in accordance with rules and regulations in relation to arbitration to be adopted by the Association when approved by the president. Be it further

Resolved, That all associations, firms and individuals engaged in the manufacture or sale of knitted and kindred products be requested to cooperate with the Association in furthering the purposes of the foregoing resolution, and that all facilities for availing themselves of these privileges be extended to them.

Some Views on the High Cost of Living.

During the past month the question of high living costs has occupied the center of the stage in public attention. Newspapers have reported much evidence secured by federal officials and in the meantime the War Department, under an act of Congress, has been selling army supplies stored in different sections of the country.

An investigator connected with the knit goods industry, deciding to secure some opinions on this important question, conducted a series of interviews and sent out a number of letters among the manufacturers of the United States seeking their opinions. The result of this investigation proves it is easier to arrive at reasons for the high cost of living than to prescribe a safe and practical method by which the cost can be reduced. This is revealed in the declarations of persons of national repute in the knitting industry—persons who are known for cool judgment as business men, students of conditions and their causes and possessed of the faculty of diagnosing a trade or economic situation, and withal credited with sincerity and honesty of purpose.

In dealing with cause there is little difference of opinion and in the main there is unanimity of opinion as to the remedy for the disturbed conditions. Practically all who submitted to an interview agreed that the high cost is due to lessened production and increased extravagance. "We must produce more or consume less or do both, or continue to suffer the consequences of not doing one or the other," says the executive of an internationally known hosiery company. In his factory there has been a 20 per cent decrease in production by reason of the substitution of the eight-hour day, and an increase of 25 per cent in labor cost. The increase in the cost to the consumer, it is held, is fully 50 per cent because of the shorter work day. During the operations of the federal child labor law, (which was declared unconstitutional) when there was need for the services of every man, woman and child, production fell off.

In the opinion of this mill executive, the government led off in establishing the eight-hour day and boosting wages, as was done in the construction of the training camps and employment in shipyards, munitions factories and in practically every establishment devoted to supplying the immediate necessities for prosecuting the war.

The estimated decrease in production because of shorter work days varies in the interviews from 20 to 25 per cent. There also has been a falling off due to the disinclination of highly-paid mill help to turn off maximum production in even the shorter day, their earnings being so large that they are satisfied with 75 per cent of what the earnings would be for full time five and one-half days of 8 hours each per week. In one mill it is shown, where a bonus is paid to workers who complete the week, some few operatives quit work Friday evenings and thus lose not only the bonus but also the wage for Saturday to noon.

It is evident this attitude is encouraged by ill-advised labor union agitators as disclosed in an utterance by an official of a machinists' organization, who is quoted as saying at a meeting in Philadelphia a few days ago, "To keep pace with mounting prices labor must demand and receive higher pay and shorter hours." His cheering audience let it be known that labor would not be satisfied with even a 44-hour week.

One of the manufacturers interviewed urging serious considerations of the problem of curbing the process of inflation, says he believes the manufacturers could "render a patriotic service to the country by cutting down their profits for the next six months." Of all the profiteers, he says, none equal the dealers in agricultural products, who exact "more blood money" than any other element.

When soliciting the interviews the following questions were submitted:

What is the cause of the high cost of living?

How shall the high cost of living be reduced?

What is the per centum increase in the cost of labor since 1915?

What is the per centum decrease in cost of production since 1915 by reason of the shorter work day, lessened efficiency and the attitude of organized labor toward restricting production?

Some of the replies or extracts therefrom follow:

"It appears to us that the only way in which we can lower the price of goods is by making them more plentiful, produce more and consume less, or accept the consequences just as we have them.

"There is absolutely no doubt about the existence of a genuine shortage in hosiery. We believe the entire textile industry is suffering from a similar shortage due to reduction in output.

"If the manufacturers of the country had intentionally combined together for the purpose of producing a shortage, how better could they have accomplished it than by simply cutting down the hours of employment and running their mills part time?

"Two important factors combined in conjunction with the operation of the draft at a most inopportune time in radically curtailing production. The first of these was the adoption by many textile mills of the country of the eight hour day in place of the ten hour day. This alone made an important reduction in output wherever adopted of fully 20 per cent and at the same time increased the direct labor cost by 25 per cent and the overhead cost by an even larger per cent. The transition from a ten hour day basis to an eight hour day basis has of itself made an increase of 50 per cent in the price to the consumer over and above the increase due to general rise in labor costs on all commodities and all operations throughout the industrial structure.

"The second important factor in reducing production was the enactment of the Child Labor Law, which, though most desirable under normal conditions, arrived upon the scene just at the moment when the necessities of war required the very maximum production by every plant and every man, woman and child available.

"The untimely happening of these two events greatly exaggerated the shortage of merchandise already made

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use them for marking finished goods with the brand name and trade-mark.

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use them for marking goods with seller's brand and trade-mark.

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use them for marking the lot, stock, and size numbers on finished garments—such as underwear and hosiery.

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serious by the abnormal demands of war conditions. They have been the greatest factors in bringing about a real shortage.

"It is doubtful if any of us fully realize the extent to which labor enters into cost of production, but when it is borne in mind that a dozen pairs of 50 cent hosiery, selling to the consumer at $6.00 for the dozen contain only about $1.00 worth of raw material, such as raw cotton, basic dyestuff chemicals, raw packing materials, etc., and when it further borne in mind that even these "so called" raw materials, such as raw cotton, dye chemicals, straw for strawboard and paper containers, are in turn fully one-half labor in their price make-up, it will be seen that probably less than 10 per cent of the price to the consumer is made up of actual raw material and 90 per cent of the price to the consumer is represented by labor, overhead, handling charges and transportation, together with a comparatively small percent for actual profit, taxes and similar items.

"The Government having led off with the eight hour day and with the exceedingly high wages paid for construction in the training camps, shipyards, munition factories and the like, the entire industrial structure has raised the wages of labor to what is now approaching the breaking point. This advance in wages has not been accomplished by any increase in output, but rather an actual decline in output, and this is where the economic difficulty arises. During the quarter of a century prior to the war, wages had advanced considerably but slowly, and, with all the advance in invention and improvement in machinery, had kept pace and had permitted a greater and greater output per labor hour. The sudden rise in wages, however, has been so rapid that it has not been possible for invention and improvement in mechanical devices to keep pace with it, and instead of being accompanied by an increase in output commensurate with the increase in cost, the output has been actually reduced while the cost has enormously increased. This situation is economically unsound and surely points to the approach of a time when all will have to work harder or longer in order to meet their living requirements. The situation will continue to tighten up unless we produce more or consume less or both.

"Our labor cost has advanced considerably over 100 per cent since 1915. Our actual output has declined approximately 25 per cent in the same period and we are advised that this holds true throughout the country and that some hosiery mills have fallen off as much as 40 per cent in production. Even the larger New England yarn mills and the leading silk mills of the country report production from 66⅔ per cent to 75 per cent of normal.

"No political body can repeal the law of supply and demand. There can be little hope for any permanent headway in reducing the cost of living without an increase in production or a reduction in consumption. It appears to us that every possible influence should be brought to bear toward increasing the production of every plant in the country and by every available means."

"An appreciable reduction of the high cost of living is going to be very difficult, if not practically impossible, there are so many angles to the situation and so many elements converging into the main issue that responsibility for this condition is hard to place. I might state without comment what I consider the main reasons: an inflated currency; the high cost of labor; the prices paid to the farmer for his produce, and profiteering. Profiteering is a much abused word—is misused and misunderstood. Every producer honestly realizes that the common welfare of his government; his business, and the interests of the people at large demands that he dispose of his wares at such a price as will yield an income equal in all respects to that realized under pre-war conditions. With taxes so high and efficient labor so scarce, one can readily see the cost of living is increased probably 50 per cent due to these last two conditions. I would think the cost of living could be materially decreased by removing some part of the income tax, and arrive at a better understanding between producer and consumer."

"We seem to be operating in a period of constant inflation," says a Wisconsin manufacturer, "and until the world is caught up with the shortage of goods and materials, occasioned by lack of production during the war, I see no practical way in which our present living cost can be reduced.

"I believe that it would be much saner on the part of the yarn manufacturers if they adopted a moderate course on prices. At the present time, every commodity that we buy has increased in price and I see no way in which we can do our bit in reducing the prices of hosiery and underwear.

"In Wisconsin, recently, the minimum wage law went into effect and we also have been forced to adopt the eight hour law. All of these things necessarily increase our costs without increasing our production.

"We feel that the hosiery and underwear industries will have to ride with the rest of the industries and get high enough prices to justify operating at a profit with the present cost of labor and material. Last year the Government purchased tremendous quantities of merchandise and of course this year, they are purchasing none. Export trade at the present time is taking a tremendous amount of merchandise and if they are able to finance the payments of this, I see no reason why this inflated condition should not last at least two years."

The following is from a manufacturer well known in the councils of hosiery mill executives:

"Fully 90 per cent of the cost of living is labor. This labor goes into the production of food and clothing, (which are the principal items of the cost of living) from the tilling of the soil to the finished product, also the stripping of the quarry, doing dead or development work on mines, etc. The demands of labor, through labor union leaders, catered to and helped by politicians, does more to make for high cost of living than any other cause. These demands of course include short hours as well as high wages, and a great part of the laboring element cannot stand prosperity; hence, when they get paid more money than it costs them to live, it makes for inefficiency as well as less production, as instead of working six days a week they will lay off when they please. Some of them only work three days a week, as they make enough money to keep them the other three days without work, and, because of the short hours, the supply of labor is short, which makes the laboring class indifferent, knowing they can get a job elsewhere if they are so inclined.

"The only thing I can see that will stop the inflation of merchandise of all kinds is the falling off in demand. As long as the demand is greater than the supply the high cost will continue, but when the demand gets less than the

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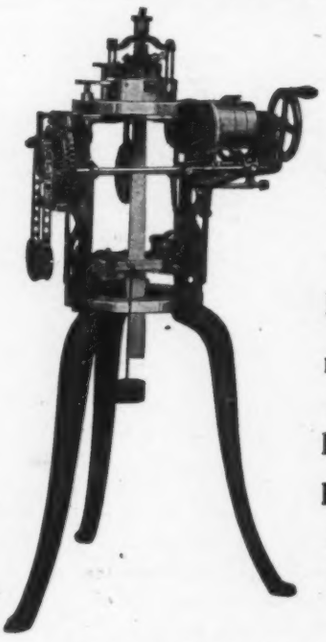

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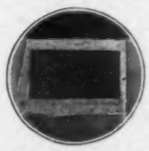

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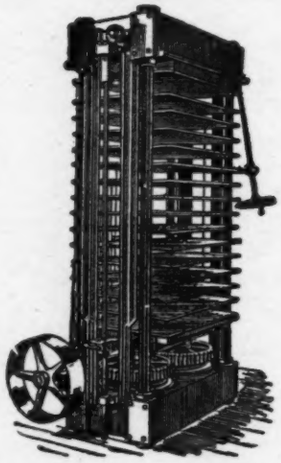

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FOR

Hosiery and Underwear

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supply the cost of living will likely be reduced, and not until then."

An executive of a very large mill in New York state, evidently favorably located as to help, writes:

"It is our opinion the high prices are due to the fact that there is more money than goods, and that high prices will stay with us until the proportions are reversed.

"The wage increase in this neighborhood has been approximately 50 per cent since 1915. We find little difference in the efficiency of help, and in our case none of the shortage in production is due to union restriction.

"The shorter work day probably will curtail production about 20 per cent. As compared with 1915 the production cost of textiles in this vicinity has increased about 80 per cent."

"The shorter work day and higher wage are operating as a double header in increasing cost of production," concludes a Pennsylvania hosiery manufacturer operating one of the better known mills of the state. Continuing he says:

"With the reduction in working hours there also is an inclination among many employees to do less work per hour. Thus we add doubly to the overhead. Hosiery manufacturers are not profiteering, and I believe they would court an investigation by Congress, in order to be set right before the public. Their margin of profit I believe to be less than that upon which it is safe to do business.

"Some of the advances in raw material, I believe, are not warranted. The increased cost of labor and cotton certainly do not, in my judgment, justify the present prices of ply and mercerized yarns. To me it seems the manufacturers of the raw material which we consume are profiteering—not in carded coarse yarns, perhaps.

"The high cost of foodstuffs was brought about by the price set upon wheat by the government during the war. High-priced wheat meant high prices for corn, oats, hay and everything that goes into the feeding of livestock, from which we derive our meat. High-priced stock means high prices for milk, butter and cream; high cereals lead to high prices for chickens and eggs.

"But there is another side: Butter at 70 cents a pound and a laborer's wages $4 a day really is no higher than when it was 40 cents and the man was receiving $2. In fact, the maximum advance in foodstuffs has been about 100 per cent., while wages have been increased anywhere from 150 to 300 per cent., and the end is not in sight.

"It seems to me the remedy for the situation complained of lies not in legislation but in arriving at a common agreement among the people to be willing to give and take, one of the policies for which we fought in the late war. So long as labor, which in the abstract produces everything, takes the stand, 'Now is my day; I will get all I can and give as little as possible in return,' the social unrest and high-cost-of-living problems will remain to be solved."

The Wellman-Seaver-Morgan Company, Cleveland, Ohio, have a bulletin containing three charts giving the relations in any shaft between power, shaft diameter, torsional stress and speed. Four examples are given in the bulletin showing the method of use for the chart. The examples are to determine the shaft diameter; to determine the torsional stress; to determine the speed; and to determine the power. This is Bulletin No. 22, and a copy will be cheerfully furnished any engineer upon request.

Among the Knitting Mills.

Arrangements have been completed by the Modern Textile Company, Harrisburg, Pa., for the construction of a new two-story plant, about 35 x 80 feet, at 1815 Penn Street. The works are estimated to cost about $15,000.

The Conrad Hosiery Company, Inc., New York, has filed articles of incorporation with a capital of $25,000 to manufacture hosiery, etc. Robert H. Bergman, Fred A. Wurzbach, and Peter Aneff, 368 East One Hundredth and Fifty-fifth Street, are the incorporators.

The National Knitting Company, Royersford, Pa., has filed articles of incorporation with a capital of $40,000 to manufacture knit goods, etc. William A. Mowrer is the principal incorporator.

The Bamberger-Reinthal Company, operating knitting mills at 2621 East Ninth Street, Cleveland, Ohio, has filed plans for the erection of a new plant at Kinsman Road and Grant Avenue, southeast, to provide for increased output. It is understood that the structure will cost in excess of $200,000. Contract has been awarded to the Bolton Pratt Construction Company, Columbia Building.

The Tailor Made Hosiery Company, Philadelphia, Pa., has filed articles of incorporation with a capital of $25,000 to operate a plant for the manufacture of hosiery. Benjamin Barron is the principal incorporator.

The Twintex Underwear Corporation, Milton, Pa., recently organized with a capital of $200,000, has completed negotiations for the purchase of the West Branch Knitting Company and is planning for immediate operation of the plant for the production of mesh and oal-briggan underwear. Edward Hecht is president and Henry Myers is treasurer.

Notice of organization has been filed by the United Knitting Mills, Jersey City, N. J., to operate at 6 Rose Avenue for the manufacture of knit goods. Rudolph W. Bauer, 60 Warner Avenue, heads the organization.

The Model Knit Wear Manufacturing Company, Inc., New York, has been incorporated with a capital of $200,000 to manufacture knit goods. Felix Bohm, Jacob Kraus, and Samuel H. Blaufeld, 312 West 109th Street, are the incorporators.

The F. J. Shutts Knitting Company, Ballston Spa, N. Y., has completed arrangements for the construction of a new four-story brick addition to its local plant, about 56 x 60 feet, to provide for increased capacity. The structure is estimated to cost about $20,000. F. J. Shutts is president.

The L. I. Knitting Mills, Inc., Brooklyn, N. Y., have been incorporated with a capital of $15,000 to manufacture knit goods, etc. J. and M. Kanefsky and J. Margolies, 234 Rockling Street, Brooklyn, are the incorporators.

The Calvin Knitting Mills, 5127 Lena Street, Philadelphia, Pa., is arranging for the rebuilding of the portion of its works recently destroyed by fire, and the installation of the necessary equipment. It is expected that the work will be completed and the mill ready for operation about the latter part of September.

Notice has been filed with the Secretary of State by the Glen Knitting Company, Second and Westmoreland Streets, Philadelphia, Pa., manufacturers of seamless and full-fashioned hosiery, of an increase of its capitalization from $300,000 to $400,000, to provide for proposed expansion.

The United States Hosiery & Underwear Company, Inc.,

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New York, has been incorporated with a capital of $20,000 to operate a local plant for the manufacture of hosiery, underwear, etc. B. Ashinsky, D. Selevan and William Ostar, 880 Gates Avenue, Brooklyn, are the incorporators.

The Gold Mark Knitting Company, Railroad Street, Woonsocket, R. I., has completed arrangements for the erection of a large new addition to its local mill, to cost about $50,000. W. A. McCarthy is treasurer.

The Herbert Hosiery Mills, Conshohocken, Pa., are understood to be considering plans for the doubling of the present capacity of their plant. The company recently completed negotiations for the purchase of property at Hector and Lime Streets, to be used as a site for the construction of a new addition.

The Buckeye Knitting Company, Cleveland, Ohio, has been incorporated with a capital of $30,000 to manufacture knit goods. J. H. Wieder is the principal incorporator.

The Chester Knitting Mills, Chester, Ill., are understood to be considering plans for the erection of a new branch plant at Millstadt, Ill., to provide for increased capacity. The company operates works at St. Louis, Mo., Collinsville, and Sparta, Ill.

The Shippensburg Knitting Company, Shippensburg, Pa., operating a branch plant at Roxbury for the manufacture of seamless half hose, has filed notice with the Secretary of State of the dissolution of the company.

The Greenville (S. C.) Hosiery Mills are reported planning an increase in their capacity.

The Crescent Knitting Mills, Spartanburg, S. C., will build a $4,000 addition to their plant and install additional machinery.

The Monticello, Arkansas, Chamber of Commerce, of which Lamar Williams is secretary, proposes the erection of a new hosiery mill at Monticello.

A $100,000 hosiery mill will be built soon in Bristol, Va., by James P. Grey, of Johnson City, Tenn., for manufacturing women's hosiery. Two fireproof brick buildings of two stories each will house the plant. The machinery has already been purchased.

The plant of the Hermitage Knitting Mills Company, of Nashville, Tenn., has been purchased by the Davis-Hale-Ranson Company, Inc., of the same place. The officers are as follows: J. McEwen Ransom, president; W. T. Hale, Jr., vice-president; J. C. Davis, secretary and manager; and A. B. Ranson, treasurer. Dyeing and finishing are done at the plant.

It is reported that H. C. Kearns, of High Point, N. C., and P. M. Dillon, of Greensboro, will organize the Dillon-Kearns Underwear Company at High Point, N. C., with a capital of $100,000.

According to report, a new hosiery mill for Johnston, S. C., is being planned by H. G. Edison.

Reducing Silk Degumming Costs.

In a prominent silk piece dyeing mill located at Paterson, New Jersey, a special degumming agent is used in conjunction with soap, the combination resulting in greater efficiency and economy. It is claimed by the superintendent of this mill that the special degumming agent has reduced their soap cost at least 40 per cent, and because of this has made it possible to employ selected soaps, resulting in a materially improved dyed fabric.

It is further stated that this degumming agent not only facilitates the degumming process, but what is perhaps more important, is the fact that it attacks the gum forcibly and releases it in a shorter space of time than where soap is used exclusively, without in any way injuring the material being degummed.

The silk degumming agent is being used extensively for the degumming of silk in silk piece mixed goods (cotton and silk), silk knitted garments and silk hosiery, and judging from information obtained from the manufacturers of this degumming agent, their product is showing the same kind of saving wherever it is employed.

For the degumming of silk hosiery this agent is used alone without the addition of soap.

The product in question possesses many distinctive and exclusive features owing to the special process which is employed in its preparation at the manufacturers' laboratory and factory. Further information may be secured by writing to the Textile Division of L. Sonneborn Sons, Inc., 262 Pearl Street, New York City, who will gladly furnish the name of the silk piece dyeing mill referred to upon request.

Sectional Meeting of Knitters.

Continually rising costs of production, demand in excess of capacity and a generally sold-up condition were shown in the reports submitted at the August meeting of the Pennsylvania Division of the National Association of Hosiery and Underwear Manufacturers, at Hamburg, Pa. None of the manufacturers present saw any improvement in the labor situation, and caution was urged in making commitments for either materials or deliveries of the finished product.

Some of the underwear manufacturers had bought yarns, mainly to cover for requirements, running well into the first quarter of 1920. None of the hosiery mills represented had bought so far ahead. While no one doubted that knit goods prices would be as high next year as at present and all believed there would be no let-up in demand, it was deemed the better course by several speakers to look for profits from operation rather than speculation in yarns. One manufacturer showed that, having been well covered with yarns at the time they reached the high figures of today, he could have sold and fared better financially than by operating the mill. He chose the latter course for keeping his help employed. Just now, he said, he would not buy yarns to anything approaching the extent to which he contracted before the price advances.

A speaker operating in knit goods and who has an intimate knowledge of German methods for conquering the markets, ventured the prediction that if manufacturers in the United States did not virtually corner yarns the Germans would soon be buying to an extent that would be certain to force prices higher. German manufacturers, he said are certain to buy cotton yarns here and get started, and in less than one year, the speaker went on, "you will find your strongest competitors not only in foreign markets, but right here at home. German buyers are here right now."

Not a knitting mill or machine in Germany, the speaker continued, was damaged in the slightest during the war. All is in readiness for a complete resumption of manufacturing except a reorganizing of the working forces, which were badly shattered while the fighting was going on.

His remarks in relation to possible German competition had the effect of causing to be injected into the dis-

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YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

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cussions the question of the danger of undertaking to restrict importations of German dyes through the licensing commission such as is contemplated in the Longworth Bill, H. R. 8078. If this country shuts out German dyes by any such drastic method, it was predicted, Germany will place restrictions on the importation of dyes to the United States, and "will use her colors in beating you in markets in which some of you are now selling." England, it was asserted, some months after the war started sent very large quantities of rubber into Germany in exchange for dyes, and more recently, before the cessation of hostilities, brought in German needles. The upshot of the discussion of the dye licensing commission subject was the adoption of the following without a dissenting vote:

> Resolved, That we, the Pennsylvania Division of the National Association of Hosiery and Underwear Manufacturers, in meeting assembled this ninth day of August, 1919, oppose the passage by Congress of House Bill 8078 (the Longworth Bill), unless the provision for the creation of a dye licensing commission be eliminated, and
>
> Resolved, That we recommend that adequate protection be given to the dye industry of the United States by protective tariff instead of a licensing commission.

Some of the underwear manufacturers, who are not consumers of dyes, at the outset were apparently little interested in the commission proposal, but when the question was squarely put, "Would you rather buy the bleach and chemicals which you use, in the open market, subject to proper customs duties, than go before a commission and ask permission to import such commodities if unobtainable here?" there was instant unanimity in favor of the resolution, particularly after one speaker had pointed out that any measure adversely affecting the hosiery or other textile interests could not but have a like effect on underwear.

Reverting to the movement inaugurated some months ago by the Pennsylvania knitting manufacturers for a standardization of colors and paper box sizes, it was decided to take no further action, as it was felt nothing was to be gained by pursuing the subject further.

A knit goods operator speaking on the prices of mercerized yarns, said that on the basis of present quotations it would be necessary to advance 220 needle hosiery to $5.50 a dozen if manufacturers were to have a safe margin over cost.

Mercerized yarn prices have reached unwarranted levels, was the opinion of several speakers, who directed attention to a margin of about 70 cents over 60s 2-ply warps for mercerizing. There were intimations that somewhere there is profiteering, an allegation which, it was held, cannot truthfully be laid to knit goods manufacturers.

It was thought coarse counts of yarns showed no evidence of profiteering by spinners. In defense of the latter it was stated by a spinners' representative that what appeared to be exorbitant prices for mercerized and fine counts of peeler was due entirely to demand. "Some of you gentlemen," the speaker continued, "questioned the advisability of buying yarns into next year. I very much doubt whether spinners are any more eager to sell than you are to buy."

This led one manufacturer to remark aside that a yarn merchant with whom he had but recently made a contract showed not the slightest hesitancy about accepting a substantial order for 26s southern frame spun carded.

Getting back to mercerized hosiery, an operator said the demand was entirely due to the high prices for silks and the depletion of the market. He went so far as to express the opinion that, with distributors buying heavily of mercerized, silks eventually must show a decline in price, and if mercerized continued to advance, he predicted also that the better grades of soft cotton goods will be in greater demand. He thought the trade already had run down the gamut of cotton hosiery.

Reference to high prices brought out a flow of thought as to the cause. The responsibility for high cost of production was divided between labor and spinners. At least 50 per cent being charged to labor in the demands of the union for increased pay and shorter work days. This raised the question of the probable effect of the attitude of the railroad employees, "1,500,000 of whom assume to dictate to the population of 115,000,000," it was stated. The meeting looked with disfavor on the proposal for turning the railroads over to the government, with the employees, without any investment in the roads, taking a part in the management and still in position to undertake to dictate to the entire management through threats of strike. The meeting adopted the following in enthusiastic fashion:

> Whereas, An experience of many months in the operation of the railroads by the federal government has resulted in decreased efficiency of operation, higher rates of transportation, a deterioration and depreciation of the roadbeds and rolling stock and an additional billion dollar taxation levied on the people, now, therefore, be it
>
> Resolved, That we, the Pennsylvania Division of the National Association of Hosiery and Underwear Manufacturers, in meeting assembled this ninth day of Auguse, 1919, believe it to be the duty of the people of the United States, for their protection and security as a whole, to bring to bear all possible pressure in an effort to prevent the passage by Congress of the Plumb Bill.
>
> Resolved, That we urge upon Congress to enact at the present session of Congress suitable laws to discontinue the operation of the railways by the federal government and to pass constructive legislation for the regulation and protection of the rights of the users and the private owners of the railways of the country.

Greases and Oils.

Commercial lubricating greases are oils held in a more or less solidified form by means of a dense fatty substance, and range in consistency all the way from that of hard tallow to soft butter, depending upon the amount of mineral lubricating oil incorporated during their manufacture.

In general, the advantages of grease over oil are cleanliness, economy and reliability. Of course, each has fields of service that the other cannot enter, but for ordinary purposes, grease is to be preferred. It does not drip and create a fire risk, it requires less attention, supply ducts are less liable to become clogged, it is easy to apply and there is less waste. Greases should always be selected that have the lowest viscosity permissible for the work to be done.

Heavy, slow moving parts need a grease that will not squeeze out, whereas light, high speed bearings require the more fluid lubricant. Then, too, one must consider the range of temperatures encountered, whether the parts are exposed to water, the design of bearings and all other conditions that may affect the problem.

Dixon's greases are manufactured with various grades of graphite and combine the advantages of oil with those of grease, and it is important that the proper one be selected for each requirement.

Two New Catalogs.

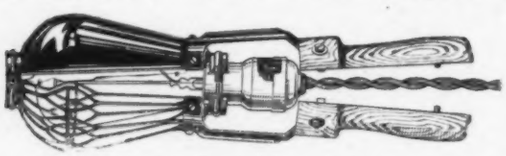
The Wildman Manufacturing Company, Norristown, Pennsylvania, has recently issued two new catalogs entitled "Circular Knitting Machinery for Underwear and Sweaters" and "Circular Ribbing Machinery—Ribbers." In the former, attention is called to some of the new features and developments which have been perfected within the last two years. Among these are the individual direct connected motor drive; new four-color striping machine for bathing suits and jerseys, and vibrating dog attachment for large rib machines and extra large body machines from 30 inches to 36 inches in diameter. This catalog contains 40 pages and is illustrated with photographs of some of the products of the company.

The second catalog also contains 40 pages and shows views of the automatic ribbers, attachments, etc., manufactured by the company. In both catalogs, which will no doubt be mailed to interested readers upon request, each machine is designated by a distinctive style letter or combination of letter and number, and under each style is listed a brief description of the machine, its uses and special features.

Convenience, Safety and Eye Comfort.

An efficient convenience for every day use in factories, mills, machine shops, foundries, garages, power plants or shops of any kind, is the Flexco split handle reflector portable lamp guard, a product of the Flexible Steel Lacing Company of Chicago.

In every plant there are innumerable places which make the need of an efficient portable electric light imperative. In engine pits, under machines and automobiles, in warehouse pits—places not lighted under ordinary circumstances—the Flexco split handle portable carries the light safely and



THE "FLEXCO" SPLIT HANDLE LAMP GUARD.

handily. This new product eliminates fire hazard because it does away with the careless use of torches and lighted matches in out-of-the-way places where a light is often needed.

The three advantages of this ingenious contrivance—(1) taking the light where wanted because it is portable, (2) protecting the bulb from breakage, (3) reflecting the light away from the eyes of the user toward the work to be illuminated—make it an indispensable convenience for every shop, garage, plant, etc., where light is needed in unusual places.

The guard is made of expanded steel, well-coated with tin. The split handle is adjusted by means of screws, and it hinges with the guard as a base. It clamps over the socket of an extension or drop cord without re-wiring. The cord runs through the grooves in the split handle.

The Sanitary Engineering Company of Charlotte, N. C., have been awarded the contract for the installation of 300 individual septic tank sewage disposal outfits, for the Carolina Cotton & Woolen Mills Co. All of the operatives' homes in this village are to be equipped with an individual sewage disposal outfit.

To Build Mammoth Plant.

The Lunkenheimer Company, Cincinnati, manufacturers of valves and engineering appliances, has announced its intention to greatly increase and improve its manufacturing facilities by building a complete new plant. The site selected for the undertaking comprises about seventy acres of land in Carthage, a suburb of the city of Cincinnati, directly on the Toledo Division of the Baltimore and Ohio Southwestern Railroad. The location selected is not far distant from the center of the city, is in the heart of one of the manufacturing sections of the city, where labor is plentiful and facilities for the handling of incoming and outgoing freight are ideal.

Plans for the erection of the new building are being prepared by capable engineers, and it is expected that work on the new structure will be started within the next few months. The undertaking will represent an outlay of approximately $2,000,000.

The welfare of the employees has been given special consideration. A piece of land of about eight acres, lying directly opposite the land upon which the main plant is to be located, has been reserved as a recreation center, upon which will be erected an assembly hall, club rooms, base ball grounds, tennis courts, swimming pool, etc. Upon this site will also be erected a dining room capable of accommodating one thousand employees at one time.

The Lunkenheimer Company moved to its present location in North Fairmount, Cincinnati, about the year 1900, the plant then comprising two manufacturing buildings, since which time many additional buildings have been erected. Having outgrown its present plant, being sorely in need of additional manufacturing facilities, and there being no more property available in the North Fairmount section, the company determined that the best plan was to acquire acreage property, with a view to providing for the future, as well as present, necessary expansion. The new plant, when completed, will contain about three times as much floor space as now used by the company.

Arrangements are being made so that there will be no interruption to the business of the company while the building operations are in progress, nor while the task of moving into the new plant is under way.

The Greenville Textile Supply Co. has been organized at Greenville, S. C., with a capital stock of $100,000 and will do a general textile mill supply business, as well as act as manufacturers' distributors for some of the leading machine and supply firms of the country. W. T. McLeod, president of the Charlotte Leather Belting Co. of Charlotte, N. C., will be president of the new Greenville firm, and H. O. Wallace will be secretary, treasurer and general manager. Mr. Wallace recently succeeded G. G. Slaughter as general purchasing agent for a large group of mills located in the South, from which position he resigns to take up this new work. Mr. Wallace was for many years connected with the mill supply department of the Sullivan Hardware Co., at Anderson, S. C., and is thoroughly experienced and has a host of friends. The Greenville Textile Supply Co. has secured a warehouse which gives them more than 25,000 square feet of floor space, and they propose to carry in stock an ample supply of all kinds of textile mill supplies.

Liquid E B G Chlorine

All Up-to-date Mills

are using or investigating E. B. G. Liquid Chlorine—the only 100% efficient bleaching agent.
It insures the whitest possible bleach, without sacrifice of strength in goods.
It is of uniform quality—99.98% pure.
It is easier to handle than bleaching powder.
It contains no sediment or sludge.
It is more efficient, requires less labor and shows a considerable saving in freight charges.
It meets the demands of modern mill methods.
Send for full particulars and let us arrange for demonstration at your mill.

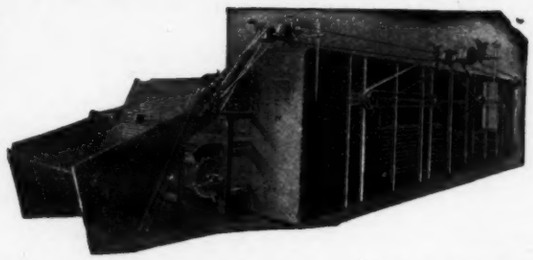
ELECTRO BLEACHING GAS COMPANY

Pioneers and Leading Manufacturers of Liquid Chlorine
PLANT: NIAGARA FALLS, N. Y.

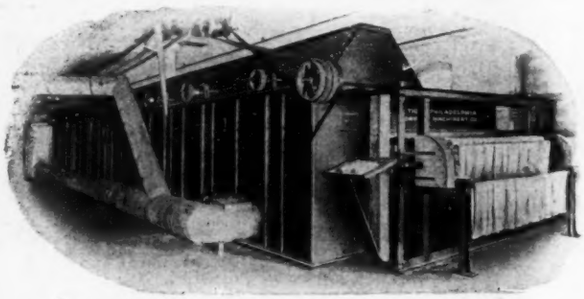
Main Office: 18 East Forty-First Street, New York City

See our exhibit at the Fifth National Exposition of Chemical Industries, Coliseum and First Regiment Armory, Chicago, Week of Sept. 22.

Shipped in Handy Containers



Automatic Stock Dryer for Wool, Cotton, Hair, Linters, Rags, With Patented Spirally Woven Sectional Wire Cloth Conveying Apron



Automatic Yarn Drying and Conditioning Machine

For Cotton, Woolen, Worsted, Silk, Linen or Jute Yarns

"HURRICANE" DRYERS

The "Hurricane" Line of Drying Machinery Includes

Automatic Loop Dryers
For Underwear, Toweling, Piece Goods, Silks, Plushes, etc.

Automatic Raw Stock Dryers
Single and Multiple Apron Types for Wool, Cotton, Linters, Hair, Flax, etc.

Continuous Piece Carbonizing Machines

Automatic Raw Stock Carbonizing Machines

Automatic Yarn Dryers
For Cotton, Worsted, Jute, Silk and Artificial Silk Yarns

Automatic Yarn Drying
and Conditioning Machines for all kinds of Yarn

Truck Dryers for Yarn
Tape, Braid, etc.

Truck Dryers for Yarn
Dyed on Cones

Hosiery Dryers

A "Hurricane" Dryer for Every Material

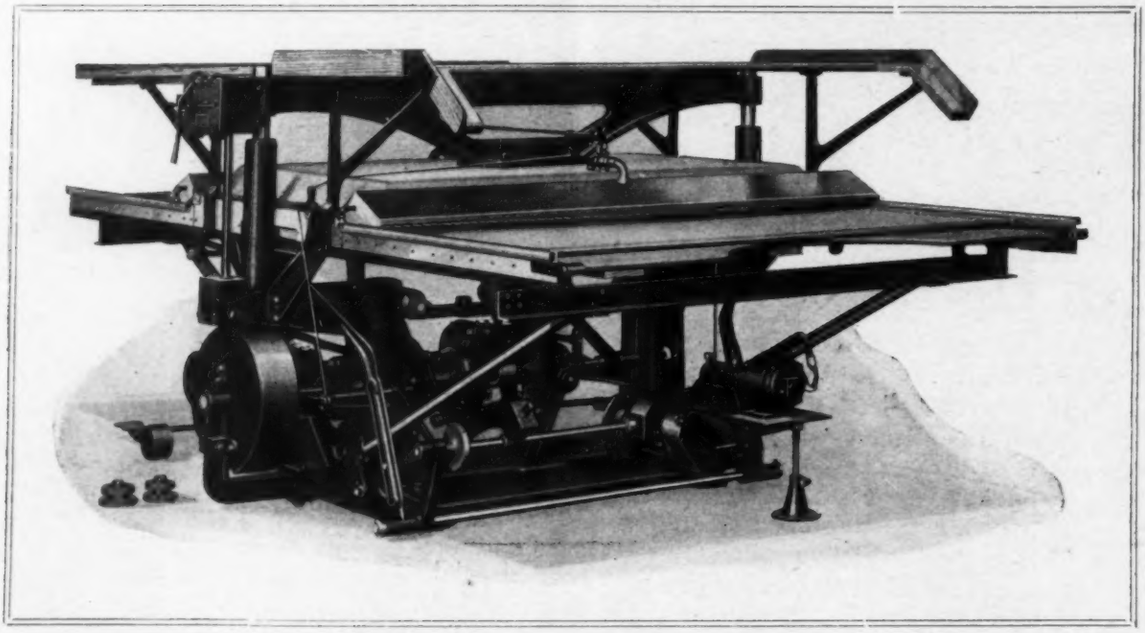
Complete Equipments for
Bleaching, Dyeing and Drying.
Send for illustrated Catalogs.

The Philadelphia Drying Machinery Company

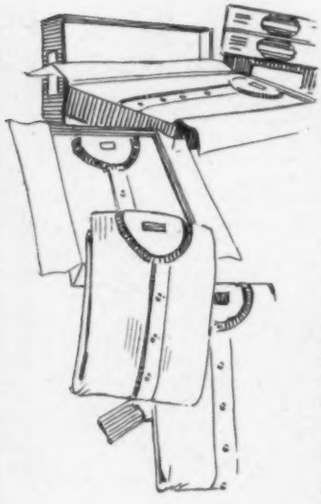
Main Office and Works
Stokley Street above Westmoreland

Philadelphia, Pa.

Boston Office
53 State Street



The American Automatic Underwear Press.



The American Automatic Underwear and Sweater Press

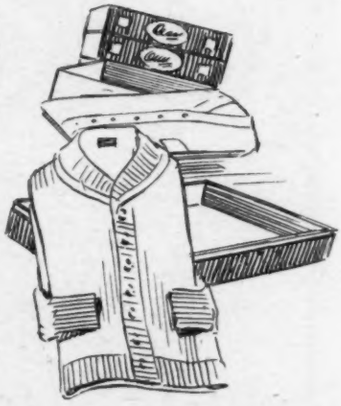
lowers Production costs in spite of higher wages and shorter hours

In spite of shortened hours and mounting wages, the American Automatic Underwear and Sweater Press lowers finishing room costs. It turns out more work with less labor and gives the garment a better finish.

This Press imparts to underwear, sweaters, knit bathing suits and similar goods that smooth, well finished appearance that "sells the eye." It makes your product stand out from the mass. It increases its sales value.

The practicability of this Press is evidenced by the large number of them in use—some manufacturers using as many as sixteen.

You should have this Press in your mill. The complete facts are highly interesting. Writing for them puts you under no obligation. Do this now.



The American Laundry Machinery Company

Specialty Department, Cincinnati, Ohio

Also manufacturers of the Rotary Hosiery Press—Textile Dryer—Hydro-Extractors—Rotary Fulling and Dyeing Machines.

Scientifically Self-Balanced

that expresses it—the word SCIENTIFIC as applied to the manner of design and operation of the Self-Balancing feature of the

Tolhurst Extractors

This self-balancing feature permits safer handling of unbalanced loads at high speed. Gravity is the controlling factor—no springs, rubber cushions or other complicated devices being employed.

Tolhurst Extractors are unapproached for continuous and exacting service. They are recognized as the standard of efficiency and durability for all classes of textile work.

TOLHURST MACHINE WORKS

Established 1852.

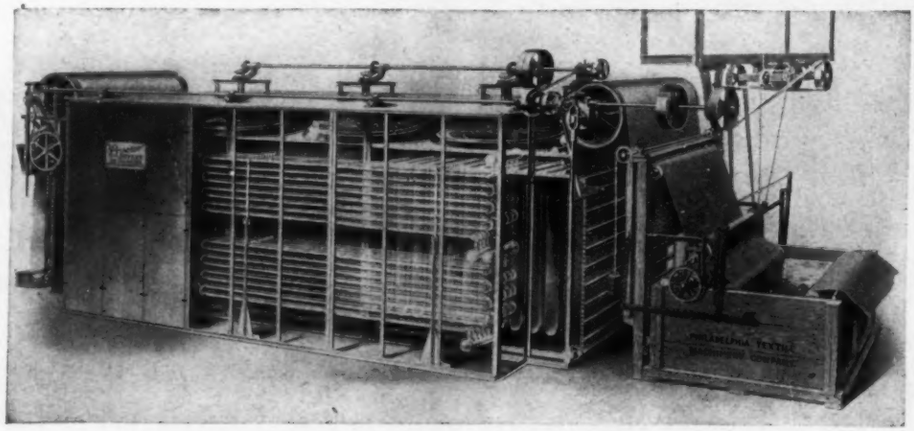
Troy, New York

New York Office: 111 Broadway.

Southern Rep.
Fred H. White,
Realty Bldg.,
Charlotte, N. C.

Western Rep.,
John S. Gage,
Hartford Bldg.,
Chicago, Ill.

Candian Rep.,
W. J. Westaway Co.,
Sun Life Bldg.,
Hamilton, Ont.



PROCTOR SHRINKING MACHINE FOR CLOTH
Showing Some of the Side Panels Removed

"THOROUGH and COMPLETE SHRINKAGE"

THE concensus of opinion on the new Proctor Shrinking Machine is expressed in the above quotation. Nationally known concerns who have had experience with this machine are absolutely satisfied that they obtain more thorough and complete shrinkage with a Proctor Shrinking Machine than by any other previous method they have tried.

The Proctor way is the most efficient and economical way to shrink woolen cloth, olive drab cotton, shirting, etc. Everything from overcoatings to linings have been run through the Proctor Shrinking Machine with equally satisfying results.

"Proctor" DRYERS FOR EVERY KIND OF TEXTILE NEED

A LARGE roll of cloth passes through the Proctor Shrinking Machine in 5 to 8 minutes, as compared with 12 to 18 hours required by other methods. The labor of three to six men is saved, depending on the methods now used. Also three-quarters to five-sixths less space is required for the operation. What's more, the cloth does not hang in tremendously long loops. In the Proctor Shrinking Machine there is no tension on the wet material while it is drying,—the loops are short and preserve the natural quality of the goods.

PROCTOR Shrinking Machine in your plant will pay for itself in a surprisingly short time. It increases production and gives uniform results.

INVESTIGATE. Submit details of your operations to us and we will promptly advise you as to what can be done. The only obligation is ours.

PHILADELPHIA TEXTILE MACHINERY CO.

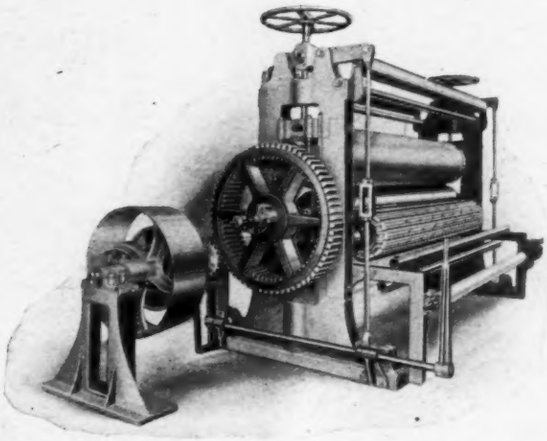
Drying Machine Specialists.

Seventh Street and Tabor Road.

PHILADELPHIA, PA.

CHICAGO, ILL. Hearst Building. CHARLOTTE, N. C. Realty Building. PROVIDENCE, R. I. Howard Building.
HAMILTON, ONT., CAN., W. A. Westaway Co., Sun Life Bldg.

43



Calender (Three Roll) for Cotton Piece Goods

IT is the finishing that often mars or makes the selling value of a fabric, consequently finishing machinery has assumed vital importance in textile production.

As specialists of a hundred years' experience, we have learned much that should prove of value under today s strenuous conditions. And we'll be glad to share our knowledge with you if you desire it.

H. W. BUTTERWORTH & SONS CO.

ESTABLISHED 1820

PHILADELPHIA

Providence Office
Turk's Head Building

Canadian Representative
W. J. Westaway Company
Hamilton, Ontario Canada

FINISHING
Butterworth
MACHINERY

"TAG" Self Operating Temperature Controllers

for size boxes, dye kettles, etc., are so simple to operate and so positive in action, that even an inexperienced attendant can obtain *uniform* results with practically no labor or attention.

"Set it and forget it" describes the situation because all the operator need virtually do is to *"set"* the controller for the desired temperature and *"forget it."* There are no fluctuating temperatures—no imperfectly sized warps or streaky and poorly dyed cloth, etc.

No compressed air or other auxiliary motive power is required and—due to the fact that the "TAG" *automatically* responds to the slightest tendency towards a temperature change, spoilage and operating costs are *reduced* considerably.

If a "Set it and forget it" situation interests you, ask for Bulletin C—387

C. J. TAGLIABUE MFG. CO.
TEMPERATURE ENGINEERS
18-88 Thirty-Third St. Brooklyn, N.Y.

Frank Hemingway, Inc.

115 Broadway
NEW YORK CITY

Dyestuffs Intermediates Chemicals

Victoria Blue B.	Direct Black
Crystal Violet Conc.	Direct Blue 2B
Sulphur Blue	Direct Navy Blue
Sulphur Black	Direct Sky Blue
Benzo Purpurine	Direct Fast Yellow
Congo Red	Chrysamine
Chrysophenine	

We Will Be Glad to Welcome Our Friends at the Fifth National Exposition of Chemical Industries,
COLISEUM
Booths Nos. 19-20 Chicago, Ill.
Week of September 22nd.

BOSSON & LANE

Manufacturing Chemists

Specializing
in
BLEACHING
DYEING
SIZING
AND
FINISHING
TEXTILES

Works and Office
Atlantic, Massachusetts

"BRETON"
MINEROL "F"

For Cotton Yarns

BORNE, SCRYMSER COMPANY

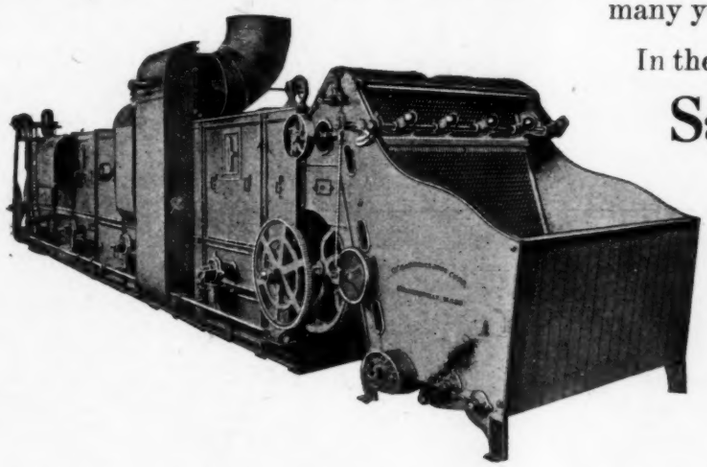
80 South Street, NEW YORK

BOSTON **PHILADELPHIA**

Works: Elizabethport, N. J.

SARGENT DRYERS mark progress in Dryer Development comparable to that made in other fields of mechanical endeavor.

They are favored with a natural preference because they are designed on basic principles of air circulation, conveying, and general drying apparatus construction, which have had the approval of discriminating mill men and drying engineers for many years.



In the

Sargent Dryer

these principles have been combined and refined, making a complete machine which is unexcelled.

For drying cotton, linters, wool, hair, flax and other classes of raw material.

C. G. SARGENT SONS Corp., GRANITEVILLE MASS.

FRED H. WHITE, Southern Agent, Charlotte, N. C.

ZAVON

ZAVON is a solvent for the textile industry. It can be used on all kinds of animal and vegetable fibre with absolutely no injurious effect on the fibre or the receptacle in which it is used.

The knit goods trade particularly are constantly troubled with oil spots, dirt and graphite, some mills getting as high as 30% spots in hosiery, while the underwear manufacturer is almost as badly off.

Soap will remove light vegetable oils, but is not satisfactory for the mineral oils and is worse than useless for graphite.

Zavon is the natural solvent for such foreign matter. It contains one of the most powerful solvents known, and its action on fats, oils, and waxes is almost instantaneous. **Zavon** will reduce your spot account 99% at a very slight cost. It gives a better hand and body to the goods than any other similar product in use today and the unevenness of shade to the finished dyed fabric due to improper circulation and penetration is reduced to a minimum where **Zavon** is used in the preparatory treatment.

We shall be glad to furnish a sample for trial on request.

ZAVON, Inc., 413 Baltic St., Brooklyn, N.Y.

AV Z ON
TRADE MARK

THE TEXTILE SOLVENT

The Grasselli Chemical Company

"Dyestuff Department"

Works at Grasselli, N. J.

Albany, N. Y. { *Formerly Owned by*
Providence, R. I. { *The Bayer Co., Inc.*

SULPHUR COLORS: Black, Blue, Brown, Green

Direct Cotton Colors, Acid and Chrome Colors

MONOPOL OIL

Bichromate of Soda *Sodium Sulphide*

Zinc Dust, Chemicals and Acids

BRANCH OFFICES:

New York	Philadelphia	Birmingham, Charlotte	Boston
Chicago	Cleveland	Cincinnati	St. Louis
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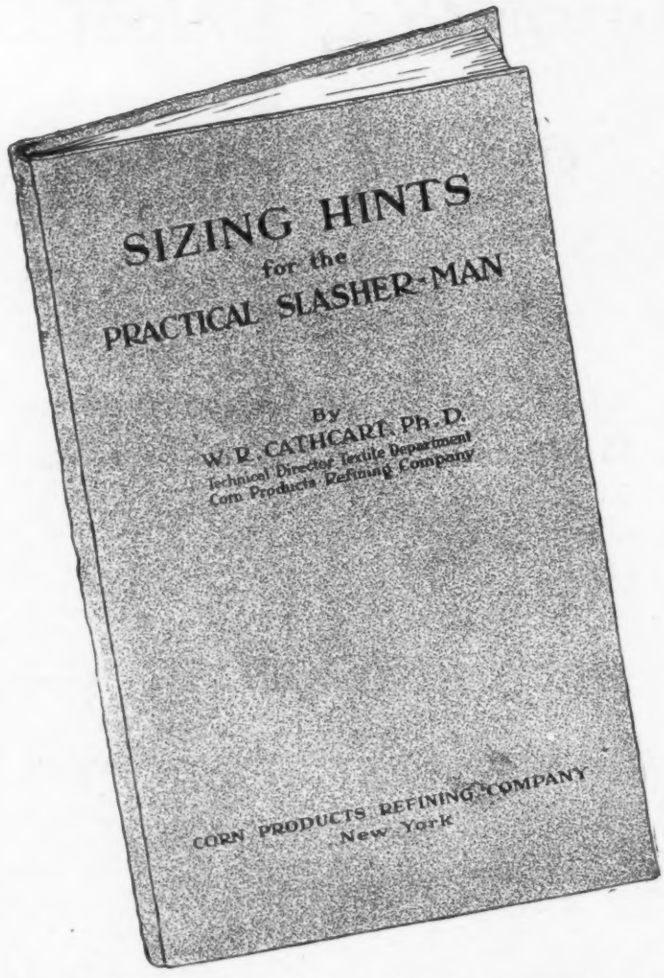
The GRASSELLI CHEMICAL CO., Limited

Toronto **Hamilton** **Montreal**

STOCKS CARRIED AT ALL PRINCIPAL POINTS

Starch



This booklet, *Sizing Hints for the Practical S lasher-Man,* by Dr. William R. Cathcart, Technical Director of the Textile Department of the Corn Products Refining Company, first appeared at the Southern Textile Exposition at Greenville, S. C., in May, 1919. The very favorable comment which this publication has received and the numerous requests for copies show that the Textile Manufacturers attach more than a passing interest to the subject matter contained therein. In many cases officers and superintendents have asked for several copies to be distributed among the men actually engaged in the manufacturing operations.

We desire to take this means of going on record that we are heartily in accord with the idea of making the information accessible to all interested and will gladly forward free of charge copies of *Sizing Hints* to Mill Officials, Superintendents and Operatives on receipt of requests for the same.

Corn Products Refining Company

17 Battery Place, *New York*

Starch

DU PONT AMERICAN INDUSTRIES

DU PONT DYESTUFFS

Sulphogene Blacks

GX, BX, AX

Sulphur Blacks are among the most important dyestuffs used in the cotton industry for obtaining fast blacks. In purchasing these products cotton manufacturers and dyers should give careful consideration to the following features now offered in the Sulphogene Blacks being manufactured by this company on a very large scale.

SHADE—The range of shades offered is such as to satisfy the various requirements—for a greenish cast, Sulphogene Black GX, for a bluish cast, Sulphogene Black BX, and for a reddish cast, Sulphogene Black AX.

¶ *Quality*—The entire manufacturing process is under thorough laboratory control, thus insuring, in every delivery, absolute uniformity in strength and shade, and freedom from those properties likely to cause tendering of materials or spontaneous combustion.

¶ *Quantity*—This product is being manufactured in sufficient quantity to furnish immediate and ample supplies for all requirements and at all times.

¶ *Price*—The price is based on the current cost of raw materials and production. It is fixed as low as possible in order to secure the widest sale and to retain and increase the economies resulting from large scale manufacture.

E. I. du Pont de Nemours & Co.
Dyestuffs Sales Dept.
Wilmington ∴ Delaware

Branch Offices:
New York *Boston* *Providence*
Philadelphia *Chicago*
Charlotte, N. C.

DU PONT

H. A. METZ & CO.

INCORPORATED

122 Hudson St., New York

Boston Philadelphia Chicago Charlotte
Providence Montreal San Francisco Atlanta

PRODUCTS:

Dyestuffs, Colors, Intermediates, Sizing and Finshing Materials, Etc.

Dyestuffs, Colors, Sizing and Finishing Materials

PRODUCED BY

CONSOLIDATED COLOR & CHEMICAL CO.

NEWARK, N. J.

Dyestuffs and Intermediates

PRODUCED BY

CENTRAL DYESTUFF AND CHEMICAL CO.

NEWARK, N. J.

Conserve the Cotton

Cotton costs too much to be scrapped on account of oil spots, uneven dyeing and tender bleached goods.

The Remedy

HYDROXY
TRADE MARK — REGISTERED

KIER OIL

Dissolves the natural oils and waxes in cotton, also combines with the mineral oil stains from the machines, making the oil soluble and easily boiled out before bleaching and dyeing—thereby reducing the amount of seconds and waste.

Wetting out or boiling out in Hydroxy Kier Oil before dyeing produces even shades—because the oils and waxes are removed allowing the dye to penetrate evenly.

Kali Chlorine Neutralizer, the superior anti-chlor, prevents tender bleached goods. **Saves you money** from spoiled material. Some day you will need it badly.

Hydroxy Turkey Red Oil—a sulphonated oil made with Laboratory Precision. Should be used in your Sulphur Dye bath to level the shade.

Hydroxy Black Developing Oil—as a final finish removes the Bronzy Color, makes a deep rich color and helps the hosiery boarder.

For the Hussong Machine—our Softening paste is made especially, it will not break up.

ACETATE OF SODA.

KALI MANUFACTURING CO.

K M C TRADE MARK K AL I

1404-1410 N. Front Street

1409-13 N. Hope St.

MANUFACTURING CHEMISTS

PHILADELPHIA, PA.

Fast Colors for Cotton

Now Produced in America

Indigo N. A. C. 20% Paste	Diazine Black H. Ex
Alizarine N. A. C. 20% Paste	Sulphur Blacks
Carbanthrene Olive G.	Sulphur Brown 2 G.
Sulphur Blue S. A. P.	Sulphur Brown 4 G.
Sulphur Yellow B. W.	Sulphur Brown T D.
Primuline N. A. C.	Sulphur Brown C. G.
Developed Blues; Blacks, Reds	Sulphur Blue L.

Bring us your dyestuff problems. Our technical department and the well equipped laboratories at our different branches are maintained for the service of our customers. Our advice involves no obligation on your part.

National Aniline & Chemical Company

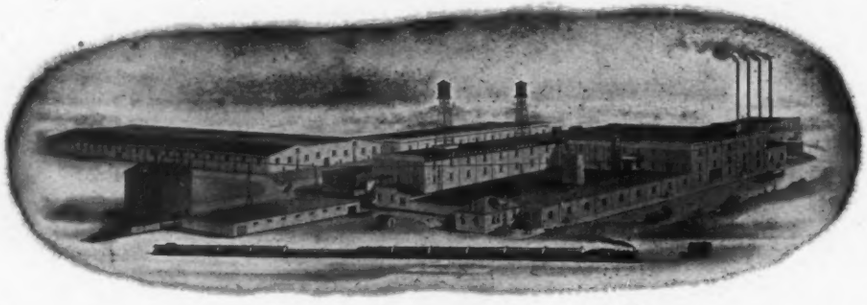
Incorporated

Main Sales Office: **21 Burling Slip, New York**

Boston Chicago Hartford Milwaukee Philadelphia
Charlotte Cincinnati Kansas City Minneapolis Providence

Southern Office and Warehouse

236 West First Street, Charlotte, N. C.



VICTOR MILL STARCH

The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience

Established 1870 *Incorporated 1890*

Melons

During the next five years the people of the United States are going to cut the biggest melon that the business world has ever grown. Forward looking men, reading aright the signs of the times, see opportunities never presented before and are preparing now for a period of unexampled business expansion. For tested products and efficient co-operation use

WARREN SOAP
AND
WARREN SERVICE

We Are Ready

The Warren Soap Manufacturing Company

77 Summer Street
Boston, Mass.

1872 1919

CHEMICALS, DYESTUFFS COLORS, GUMS, OILS

FOR THE TEXTILE INDUSTRY

HEADQUARTERS FOR

ACID, BASIC, DIRECT, CHROME and SULPHUR COLORS; "CIBA" and "CIBANONE" FAST VAT DYES

A KLIPSTEIN & COMPANY

644-652 Greenwich Street NEW YORK CITY

AN IMPORTANT MESSAGE

To Turkey Red Oil Users

Wherever SONNEPHOL is used a saving of 50% is effected as compared with the cost of TURKEY RED OIL.

SONNEPHOL is a concentrated textile oil—a dependable *softener*—Fibre Strengthener and an Intensifier.

We back it with a positive Guarantee as to Price and Performance.

Here is how some of the leading mills are using SONNEPHOL and with success.

(1) *In the Dye Bath.*
(2) *As a Fibre Lubricant.*
(3) *With Print Paste.*
(4) *In Finishing.*

Write for trial barrel and formula.

L. SONNEBORN SONS, Inc.

Textile Products Division.

262 PEARL STREET NEW YORK CITY

SONNEPHOL bears the "AMALIE" trade mark.

Atlantic Blacks

Our list of Sulphur Blacks now includes:

ATLANTIC BLACK B EXTRA, a Jet Black of unequalled shade and intensity, especially suited for dyeing hosiery, skeins and warps. This mark has comprised our chief production to date.

ATLANTIC BLACK G EXTRA, a Greenish Black, particularly suited for warps in union fabrics to be cross-dyed.

ATLANTIC BLACK R EXTRA, a Reddish Black, recommended for dyeing raw stock, where covering power, and not shade, is the chief consideration.

All the above Blacks possess the unrivaled "ATLANTIC QUALITY."

Atlantic Dyestuff Company

WORKS: BURRAGE, MASS.

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"Sonoco"

The Mills with which we have grown up know the unquestioned superiority of

"Sonoco" Cones

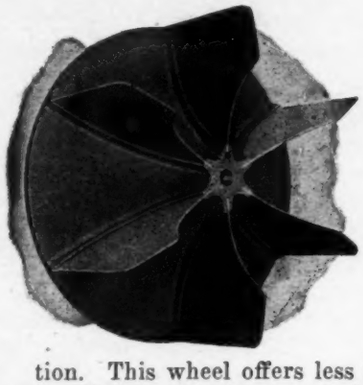
Cores and Parallel Tubes

in Fit, Strength and Uniformity. For years this knowledge has been a source of saving to them. We want to extend our usefulness—we want you to learn, as they learned, in your own winding room, that "Sonocones" prevent waste and produce stronger, better packages.

Let us send you samples!

Southern Novelty Co., Manufacturers of Cones, Cores and Parallel Tubes Exclusively Hartsville, S. C.

"Sonoco"



Here's the Fan Wheel

That Has Made These Reversible Fans So Universally Successful in Cotton Mills

This fan wheel is the secret of the success of our reversible fans for conveying Cotton, Wool, Rags and Stringy Material of any kind.

This fan wheel is constructed with a cone-shape back of cast iron with sheet steel blades cast solid. Note the short overhang, which makes the fan run smoothly without vibration. This wheel offers less resistance to material passing through than any other wheel. It handles long, stringy material just as good as short material or lint.

And it's reversible.

The fan is built solid and runs without a tremor at maximum speed. No buckling of suction at high speed. No rivets to work loose. Universal adjustment of bearings, not simply up and down.

Made in any size, from 30 to 60 inch.

Folder R. F. explains fully. Ask for it today. Our catalogs No. 65 and 67 show complete line of fans and blowers for every class of work.

We have a large stock of repair parts which can be shipped at a moment's notice.

BUILT RIGHT RUN RIGHT

The New York Blower Co.

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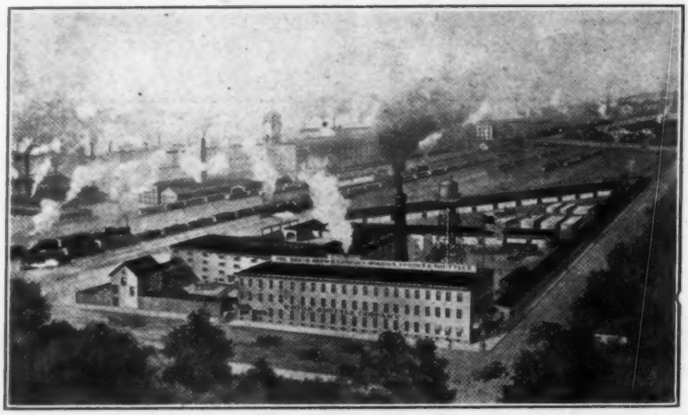
E. C. Atkins Co., Memphis, Atlanta and Indianapolis, Ind.

370 Central Ave., East Orange, N. J.

The David Brown Company

Factories Lawrence, Mass. U. S. A.



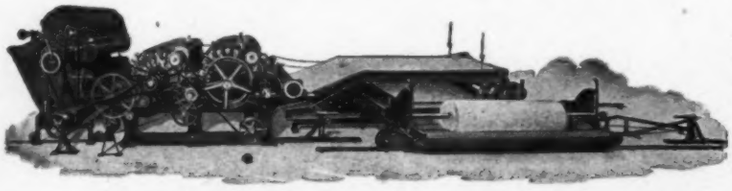
High Grade Bobbins, Spools, Shuttles and Skewers.

Facilities are the Best.

Correspondence Solicited.

SMITH & FURBUSH MACHINE CO., Philadelphia

Specialists in machinery for working all kinds of waste products. Machinery for coarse waste yarns, mop yarns, rope; for shoddies, for wiping waste; for re-woven jute bagging, etc.



FELTING OUTFITS

for making batts or felts for mattresses or comfortables.

We build complete outfits of machinery for all kinds of felts.

Send for Catalog S-15

SPOOLS

Let us submit prices and samples on WARPER and TWISTER SPOOLS. Plain wooden head and metal shield. A list of Southern Mills using spools given on request.

Greenville Spool & Mfg. Company

Greenville, S. C.

THE SIGNODE SYSTEM, INCORPORATED

Manufacturers of

BALING TIES BUCKLES BOX STRAPPING

SIGNODE EQUIPMENT for Banding Bales and Boxes.

Signode System gives you Security, Economy and the most rapid methods known for securing bales and boxes.

SIGNODE SYSTEM, Inc

Sole Manufacturers and Distributors.

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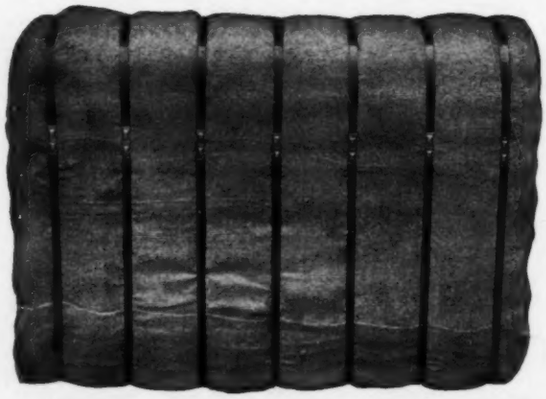
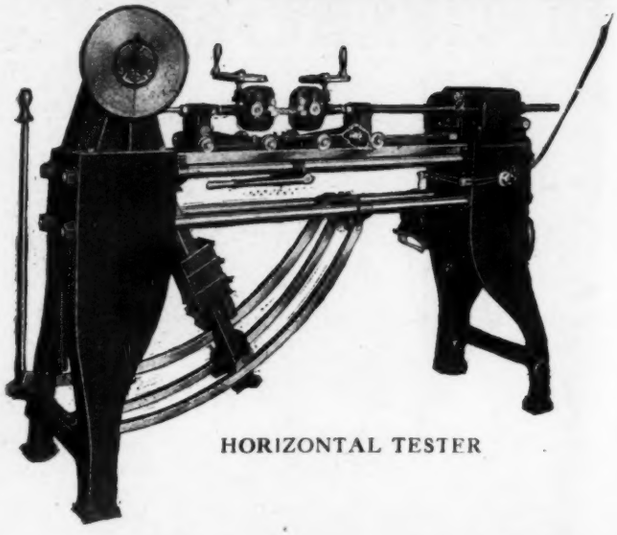


SCOTT TESTERS



HORIZONTAL TESTER

ACCURACY and dependability in testing the strength of heavy ducks, tire fabric, etc., has been found in this type of machine under the hardest and most trying conditions. It can easily be operated by female help and because of its simple and sturdy construction will stand up under years of continuous service. It is also exact enough for laboratory research work and can be found in daily use in many government and private laboratories and technical colleges.

Full information of this and other Scott Testers for various purposes will be promptly sent upon request.

HENRY L. SCOTT & CO.
PROVIDENCE, R. I.

Nickel-Plated Drop Wires

— IN ANY SIZE OR STYLE AT ONLY —

25c Per Thousand

above the price for regular finish. Our drop-wires are made of the best grade steel wire.

STEEL HEDDLE MANUFACTURING CO.

Greenville : Philadelphia : Providence

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MOSSBERG

STEEL BEAMS AND SPOOLS

It's good business to buy Pressed Steel Beams, Reels and Spools, because the cost of repairs and replacements makes wood construction the most expensive. Steel is stronger and lighter than wood or cast iron.

No more split, cracked, splintered, warped or chipped beam heads or reels, when you use

MOSSBERG
PRESSED STEEL CONSTRUCTION

Because of the obvious superiority, mills all over the country are standardizing on Pressed Steel, saving money and the time wasted by frequent purchasing.

Send for catalog of Standard Pressed Steel Beams, Reels and Spools which take care of practically all winding and reeling requirements.

FRANK MOSSBERG CO.
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Leatheroid

MILL RECEPTACLES

WHAT you want is *service*—*long service*, and that is what you obtain when Leatheroid receptacles and retainers come into your mills.

Leatheroid Roving Cans, Mill Cars, Mill Boxes, Mill Baskets and Doffing Cars are made in a variety of sizes and shapes. A booklet containing pictures and full information will be mailed on request.

Sold by the Leading Supply Houses of the South

ROGERS FIBRE CO.
LEATHEROID DIVISION
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PA.

HARD COMMON SENSE SAYS

Discriminate between— { Low First cost / Low Ultimate cost

FIG. 27

If you use

LANE CANVAS BOXES, TRUCKS AND BASKETS

You are on the right track

W. T. Lane & Bro., Mfrs., Poughkeepsie, N. Y.

SPINNING RING SPECIALISTS SINCE 1873

SPINNING RINGS
TWISTER RINGS
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TRAVELLER CUPS
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WHITINSVILLE SPINNING RING CO.
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Efficient Conveying and Storage Equipment Will Cut Down Your Labor Costs.

Several years of specializing on conveying and storage equipment for cotton mills enable us to solve your problems in an intelligent way, to suggest the most efficient equipment for the work you have to do.

Without obligation on your part, one of our representatives will be glad to call and tell you frankly what our equipment can do for you.

REPRESENTATIVES FOR
Economy Engiheering Co., Tiering Machines.
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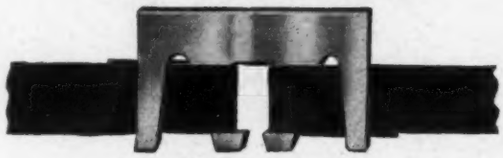
ACME
Cold Rolled Bale Ties
used with
Acme Bale Buckles
or
Acme Seals
MAKE
Better Bales



Acme No. 9 Bale Buckle

Acme Nailless System Seal

Acme Steel Goods Co., Mfrs.
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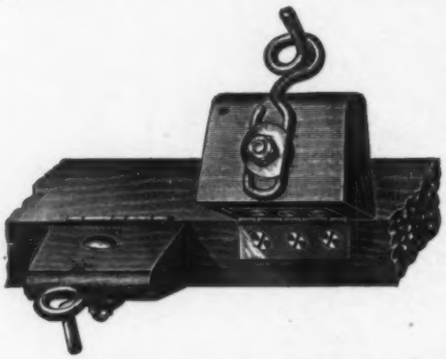
Chicago New York New Orleans

The Palmer Adjustable Thread Guide



For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY
Middletown, - - - Connecticut

AMERICAN
SUPPLY COMPANY
PROVIDENCE, R. I.

MANUFACTURERS OF

Loom Harness,
Weaving Reeds,
Oak Tanned Leather
Belting, Strapping,
Etc.

We make a specialty of Harness for Warp Drawing Machines

NOTE—No orders too large for our capacity. None too small to receive careful attention.

"THE STANDARD" AUTOMATIC DIAL SCALE

THIS model of "THE STANDARD" Line is one of the most popular among textile mills. It was designed especially for textile mill use and its popularity is due to the fact that we endeavored to eliminate all objectionable features encountered by many mills in other makes of scales. And as it contains all the accuracy, speed, and ruggedness found in all "The Standard" Scales, the result is the PERFECT scale for textile mill use.

"THE STANDARD" Automatic Dial Scale is set flush with the floor so that trucks may be rolled on and off without re-loading. As the weight of the truck is allowed for on the tare beam, the weight indicated by the dial is that of the material in the truck.

The large dial has clear bold figures and wide spacings which assures speedy weighing. Dial capacity can be doubled by our doubling attachment. Capacities up to 20,000 lbs. Constructed entirely of metal, and remains accurate throughout its long life.

Ask today for catalog 85, which shows the complete line of "THE STANDARD" Scales, and describes each.

The Standard Scale & Supply Co.

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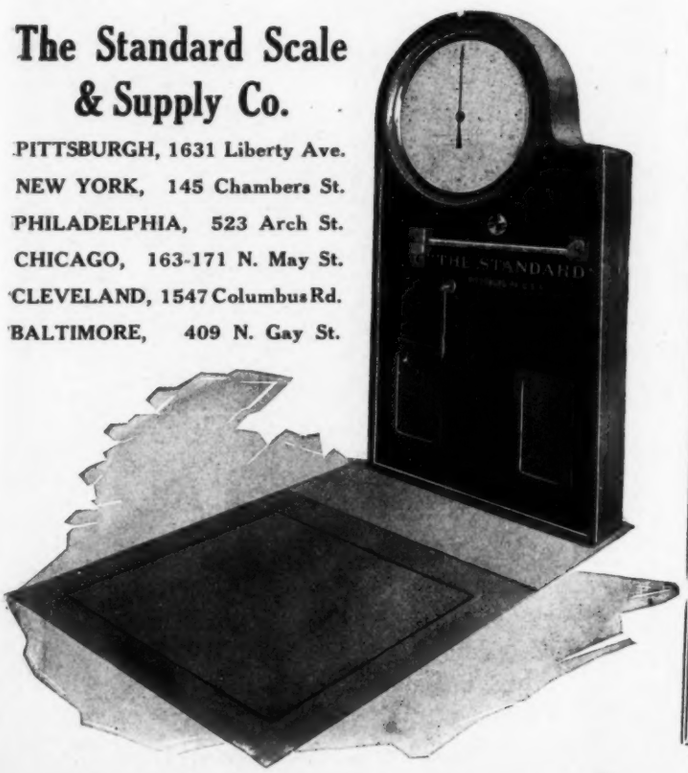
NEW YORK, 145 Chambers St.
PHILADELPHIA, 523 Arch St.
CHICAGO, 163-171 N. May St.
CLEVELAND, 1547 Columbus Rd.
BALTIMORE, 409 N. Gay St.



Production - Counts While They Help

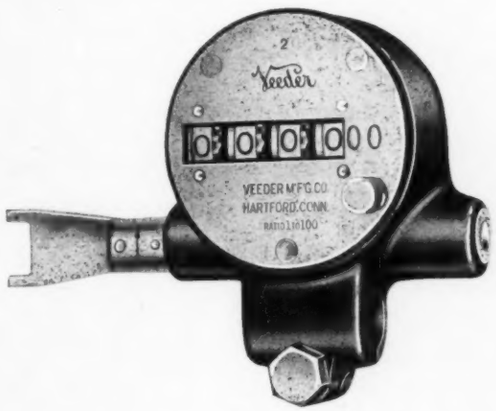
Production-counts help more in getting results when they tell what your machine is ***doing,*** rather than what it's done.

You want the output recorded while there's time to ***improve*** the rate-of-work on any particular run.

That enables the operative to maintain a steady, standard production rate; it merely requires

Veeder COUNTERS

And because **Veeders** count production as your machine works, they tell where one operative leaves off and the next shift begins, in records of work completed



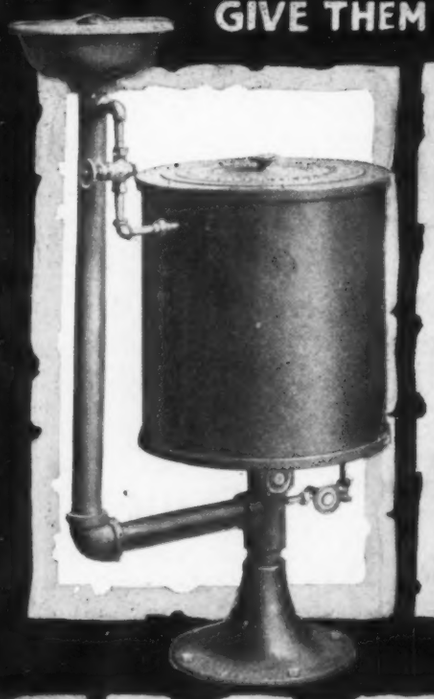
The Hank Counter illustrated above records the output of Spinning Frames, Mules, Cards, Lappers, Combers and any frame or machine where the product is ejected by rollers. Usually geared to measure in hanks of 840 yards each, and reads in plain figures. This counter is built especially and exclusively for textile machinery; its mechanism will stand service under **textile mill conditions;** it is not an adaptation of a counter for general machine use. Specially built models for other textile machines are shown in the Veeder booklet—**ask for copy.**

The Veeder Mfg. Co.

6 Sargeant St., Hartford, Conn.

Keep the Employes You Have

GIVE THEM THE CONVENIENCES THEY WANT



HERE is one way to hold employees, and make them more contented and healthy also.

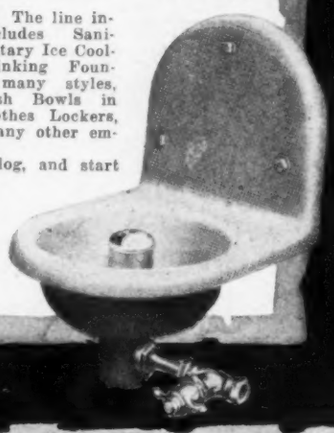
They appreciate every little piece of equipment you install for their convenience, and it's certainly not an expense, but a good investment, to install this

MEECO
Metal Equipment For Shop And Factory

SANITARY EQUIPMENT

The line includes Sanitary Ice Cooled Drinking Fountains in many styles, Sanitary Wash Bowls in Batteries, Metal Clothes Lockers, Sanitary Toilets, and many other employee-keeping fixtures.

Write today for the complete catalog, and start today to solve your labor problem.



Manufacturing Equipment & Engineering Company

136 Federal St. Boston, Mass.
Address all communications to
FRAMINGHAM, MASS.

Holyoke Transfer System

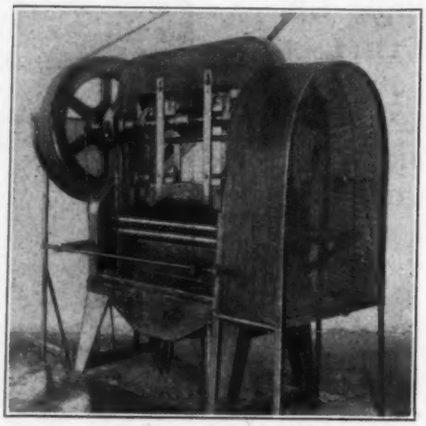
Soon Pays For Itself

HOLYOKE TRUCK COMPANY — EFFICIENCY QUALITY SERVICE — HOLYOKE MASS

Consider this: six minutes to load, four minutes to unload (average time) old style trucks, and compare it with the quarter of a minute it takes a Holyoke Truck to back under the skid and pick up its load plus another quarter-minute to deposit and clear. With a saving of 9½ minutes time on each truckload, the Holyoke Transfer System soon pays for itself. There are other advantages—distinctive ones—well worth investigating. Details in Bulletin.

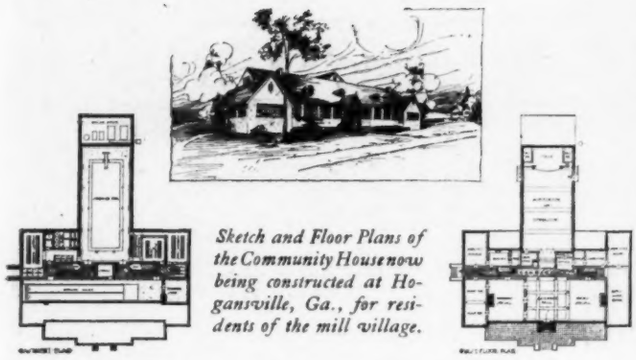
Holyoke Truck Co.
119 Race St., HOLYOKE, MASS.

Beckley Perforating Co.
14 North Ave.
Garwood, N. J.



STEEL surfacing for sand rolls, Drying machines and ovens, Copper and brass centrifugal liners, Sheet steel for machinery guards, Steel vats, Kettles and Tanks, electrically welded.

SOUTHERN AGENTS
WILSON COMPANY, GREENVILLE, S. C.



Sketch and Floor Plans of the Community House now being constructed at Hogansville, Ga., for residents of the mill village.

An Investment in Happiness

"BUILDING WITH FORESIGHT"

HOGANSVILLE is a mill village in a little country town in Georgia. It is a model village, with shaded streets, tidy homes and ample gardens. But the people had no place for social gatherings or recreation. So it was decided by the mill management after conferring with the operatives to build a Community House for the benefit of all the residents.

This house is now being built. It contains a tiled swimming pool for which there seemed to be a unanimous wish. It has showers, lockers, bowling alleys, rooms for social gatherings for both men and women, and an auditorium suitable for lectures, moving pictures or amateur theatricals. There are also committee rooms where classes in domestic science and in the theory of mill operation will be conducted.

All of which represents an investment by the International Cotton Mills, Hogansville Division, in the happiness of its workers.

Human engineering has become an important part of industrial engineering. Lockwood, Greene & Co. have given careful study to the human side and have had long experience in housing and welfare work of many kinds. If you can use this experience, we shall be glad to hear from you.

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LOCKWOOD, GREENE & CO. OF CANADA, LTD., MONTREAL, P. Q.
COMPAGNIE LOCKWOOD GREENE, 47 AVE. DE L'OPERA, PARIS, FRANCE

The TRIDENT WON'T CLOG

HAVING doubtless tried to your entire **dis**satisfaction the type that **will** clog, perhaps that one feature will appeal to you as it has to so many other factory and mill people throughout the country.

The success of the **Trident** is due to the improved extra large throatway and direct drop to the outlet. Most closets, you know, have a horizontal shelf in the bottom part of the outlet which invariably clogs under severe conditions.

This the Trident will not do, which explains why so many people interested in correct sanitation have equipped their plants with this perfect type of Water Closet.

Write for illustrated folder showing the Improved Trident in detail.

RUNDLE-SPENCE MF'G. CO.

Milwaukee, Wis.

THE IMPROVED TRIDENT WATER CLOSET

BELMONT IRON WORKS

PHILADELPHIA NEW YORK EDDYSTONE

ENGINEERS — CONTRACTORS — EXPORTERS

STRUCTURAL STEEL

Complete Industrial Buildings.

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CABLE ADDRESS:
"BELIRON"

CODE: WESTERN UNION
FIVE LETTER EDITION

ILLUSTRATED CATALOG IN ENGLISH, FRENCH AND SPANISH MAILED ON REQUEST

Complete Warehouse Stock of Structural Shapes and Plates for Immediate Shipment

"But those colony houses have no sewer connections."

"—You dont need any with Kaustine"

Are you facing the problem of this mill owner? Are you seeking way to better sanitation in your employes' homes?
The Government housing program demands it. So does the sucess of your business. For the health and happiness of your employes are big factors in increased output and reduced labor turnover.

And sanitation is the solution of the health problem. The installation of Kaustine Toilet Systems in scores of workers' colonies has proved that fact.

Kaustine TOILET SYSTEMS

Give Modern Toilet Conveniences Even in Unsewered Districts.

Kaustine Toilets require neither water nor sewer connection. They are based on principles advocated by health authorities.
The Kaustine System disposes of sewage immediately after discharge from body. Chemical reaction insures sanitation.
No bailing is necessary as with ordinary chemical closets. Sewage is flushed into leaching pool by means of drain valve, immediately after disinfection in Kaustine tank. All metal parts constructed of Armco Iron (pure iron) and specially treated.
Your own workman can install the System in a remarkably short time. And the Kaustine installation experts will offer you their counsel in laying your plans.

Write for this counsel and for the Kaustine Catalog which has revolutionized sanitation in mill and factory villages.

Kaustine Company, Inc.

Charlotte, N. C. Buffalo, N. Y.

VOGEL

PATENTED

Frost Proof Closets

350,000 giving satisfaction. Save Water; Require no Pit; Simple in the extreme. The most durable water closet made. In service winter and summer.

No. 1

- Enameled roll flushing rim bowls.
- Heavy brass valves.
- Strong hardwood seat.. Galvanized tank.
- Malleable seat castings will not break.
- Tested under hydraulic pressure before leaving factory.

SOLD BY JOBBERS EVERYWHERE

JOSEPH A. VOGEL CO.

WILMINGTON
DELAWARE

"Cotton Mill Machinery Calculations"

EVERY Textile Man should have these reference books. They cover in a detailed and thorough manner all calculations necessary to be made on any cotton mill machinery manufactured in the United States and constitute one of the best references on the subject obtainable.

The two volumes are illustrated with 45 diagrams and contain 21 reference tables.

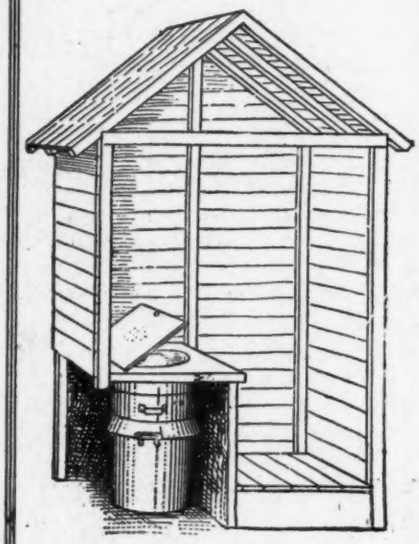
As the value of a book lies in its contents and not in a fancy cover, we have put these two volumes out in a strong, serviceable paper binding. You can secure them in conjunction with a subscription to COTTON.

Write for circulars and full information.

SANITARY CLOSETS

5c Per Month

An installation of Stevens Sanitary Closet Cans is much less costly than the delay and confusion of a disease epidemic which can easily disable your employes, retard production and sap your profits. Don't overlook the danger of insanitary, unattractive ancient fly-bearing outdoor privies.



Stevens Sanitary Closet Cans

are now and will continue to be the least expensive, most practical method of solving the surface closet proposition in a mill village.

You can put them up in a few minutes' time without any trouble, and once in place they will give you five to six years of uninterrupted service without paint or repair. Don't let the thought of economy in doing without high-priced equipment cheat you out of a sanitary system of surface closets when Stevens Cans will do the work for five cents per month. Send your order—install your cans and insure the healthy uninterrupted, most satisfied work of every employe in your community to your own profit and satisfaction.

CANS COMPLETE $3.50 each

A postal brings further information, list of satisfied customers, or a shipment of Stevens Cans.

WRITE US TODAY

The Selig Co., Manufacturers

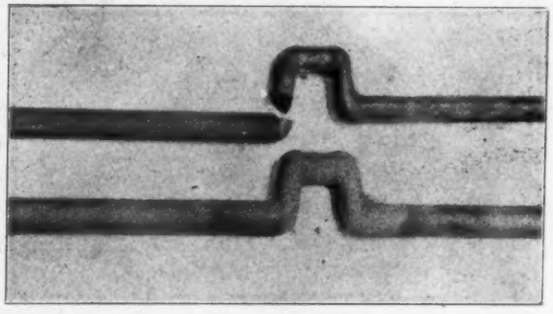
SELIG CO. OF TEXAS
Western Distributors
DALLAS, TEXAS

Atlanta, Ga.

SOME WHO USE IT

Warlick Lumber Co. Gilkey, N. C.
J. A. Brantley Lumber Co. Zimmerman, La.
Town of Boyce Boyce, La.
Lincoln Coal Co. Kypton, Ky.
City of Kensett Kensett, Ark.
Electro Metallurgical Co. Glen Farris, W. Va.
Bodcaw Lumber Co. Stamps, Ark.
City of Winona Winona, Miss.
W. M. Cady Lumber Co. McNary, La.
Town of Oakdale Oakdale, La.
Bertha Mineral Co. St. Mary's, Ga.
Tifton Cotton Mills Tifton, Ga.
City of Atmore Atmore, Ala.
City of Bay Minnette Bay Minnette, Ala.
McWilliams, Wells & Pearson Richton, Miss.

What Would 125 New crank shafts have cost?



A certain cotton mill, in six months' time, has made 125 broken crank-shafts as good as new with their Bird-Wilcox welding apparatus, at costs of less than $1.00 each.

What would 125 new crank shafts have cost them?

Their welded crank-shafts are giving as good or perhaps even better service than new ones, and just goes to prove that every cotton mill is not fully equipped without a

B-W Welding and Cutting Machine

We not only supply the machine, oxygen and supplies, but we send experts to your plant to teach your mechanic how to use it.

B-W SERVICE

means that if you have a breakdown too large for your own mechanic, our experts are always ready to come to you.

Write today for catalog and price list.

BIRD-WILCOX COMPANY, Inc.

Oxygen, Oxy-Acetylene Welding and Cutting Machines and Supplies.

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Sewing Twines
Baling Ropes
Right Quality, Right Prices

Henry C. Kelley Company

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Heavy Picker Bearings Need

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NON-FLUID OIL
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It won't squeeze out with pressure

WHEN you use NON-FLUID OIL on the fan and beater bearings of Breaker Pickers you not only cut down power consumption by diminishing friction, but you prevent wear on these speedy heavy bearings and lengthen the picker's life.

Ordinary Oil is too wasteful of lubricant and requires too frequent applications and has a tendency to get on the blades and be thrown onto the cotton.

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Use A000 NON-FLUID OIL for Fan and Beater Bearings of Breaker Pickers, Intermediate picker and finisher picker. You get better lubrication at less cost per month and reduces the wear on machinery.

Write today for free testing samples and book on "Lubrication of Textile Machinery."

New York and New Jersey Lubricant Company
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POWER TRANSMITTING MACHINERY

Merit Plus Recognition

"The heights by great men reached and kept were not attained by sudden flight."

Time, skill and effort must also proceed merit as surely in machinery as in men.

Time, skill and effort must also proceed merit in order to obtain and maintain for merit the recognition it deserves.

The great number of large installations of Cresson-Morris Power Transmitting Machinery is proof of both the merit and the recognition of the merit that nearly three score years of skill and effort have endowed it with.

The cumulative knowledge of all this experience is always available to you in the recommendations of our engineers.

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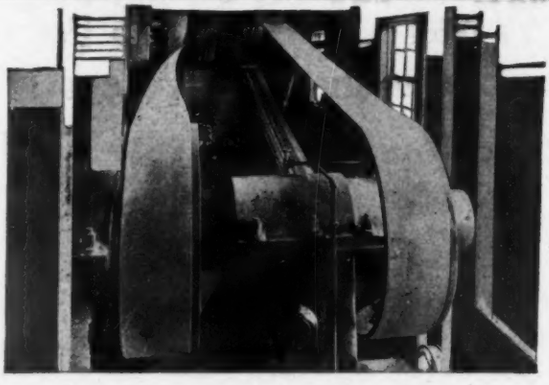

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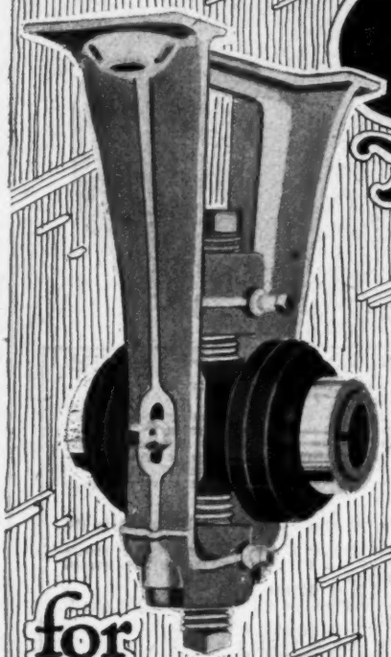

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Your good judgment that would cause you to stop being short changed from 15 to 40 cents on every dollar you spent, is the same good judgment that would interest you in Chapman Type Ball Bearings for your lineshafting if you knew that babbitted bearings were short changing you to the same extent.

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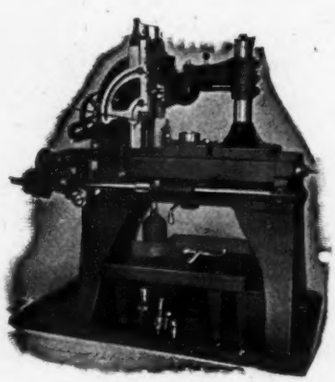

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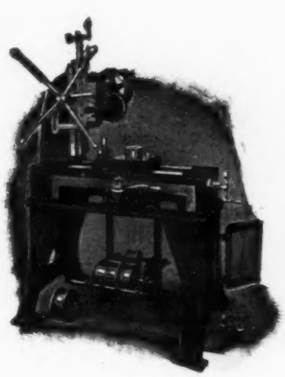

The D. E. Whiton Machine Company

New London, Conn.

"A pump is only as serviceable as the valve you put into it"

"A man must be sure of his valve because no other part of a pump gets greater wear. And nothing will cause it to go 'dead' and become ineffective quicker than a defective valve. The fact that it works out of sight, too, makes it absolutely necessary to put in a pump valve that you know is reliable. That's why I'm using Jenkins Pump Valves in all my pumps. I know what they are."

What this engineer said about pump valves is true, beyond a doubt, and because Jenkins pump valves have proved their worth by actual performance is a reason for their extensive use.

Jenkins pump valves are made in several compounds—each compounded to meet the conditions of some particular service.

Many years of experience in perfecting these compounds, the modern methods used in our rubber factory, and the rigid inspection and careful supervision of every stage of the process of manufacture enables us to make pump valves of maximum service.

Know genuine Jenkins Pump Valves, too, by the Jenkins "Diamond Mark." Your supply man can serve you.

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646 Washington Blvd. . . . Chicago
Jenkins Bros., Ltd.
Montreal London, E. C.

Jenkins Valves

Schedule of Principal Compounds and Service for Which Jenkins Pump Valves are Guaranteed

NO. 80 COMPOUND
Hot Water Valve, for pressures up to 250 pounds, temperature not less than 180 degrees, nor more than 300 degrees.
For air compressors these valves have been very successful. While extremely hard, they possess sufficient elasticity to insure absolute tightness under various conditions of pressure.
They will give entire satisfaction in oils, naphtha, syrups, acids and other destructive fluids.

NO. 88 COMPOUND
For warm water up to 100 pounds pressure; cold water 50 to 400 pounds pressure.
For mining and high pressure service, or for elevator service where the water is often slightly oily, these valves have proved equal to every requirement.

NO. 93 COMPOUND
Cold Water Valve, for pressures up to 150 pounds; or 100 pounds pressure to 180 degrees.

NO. 94 COMPOUND
Cold Water Valve, for pressures to 100 pounds.

NO. 15 COMPOUND
For Cold Water Pressures up to 75 pounds, and for Condenser Air Pumps, etc.
Some types of Condenser Air Pumps use valves that are held closely to the seat at centre, curving up from that point to outer edge of valve as they lift; for this work, also for square or oblong flap valves, a soft valve is required, and for this purpose we recommend our No. 15 Compound. It is a tough, flexible valve and will stand heat 120 to 180 degrees under moderate pressure and give long service.

2651-J

Announcement

Mr. F. A. Seeger announces the formation of the Seeger Machine Tool Company, and the severance of his former connections.

The new Company will handle the same well known lines of Machine Tools which Mr. Seeger has represented in this territory for the past six years.

Our large stock in Atlanta and direct connections with the manufacturers enable us to fill your orders for machine shop equipment and supplies even more promptly than heretofore.

Cincinnati Milling Machines
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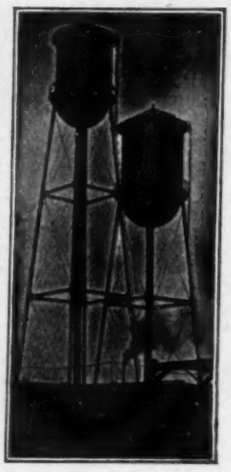
Lodge & Shipley Lathes
Sidney Engine Lathes
Cincinnati Planers
Baker Brothers Keyseaters
Acme Turret Lathes
Gisholt Turret Lathes and Boring Mills
Landis Bolt and Pipe Machines
Houston-Stanwood & Gamble Heavy Duty Lathes
Whiting Foundry Equipment

Complete stock shop tools and supplies

Seeger Machine Tool Company
34 South Forsyth St., Atlanta, Georgia.

TOWERS and TANKS That are Built Right



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Chattanooga, Tenn.

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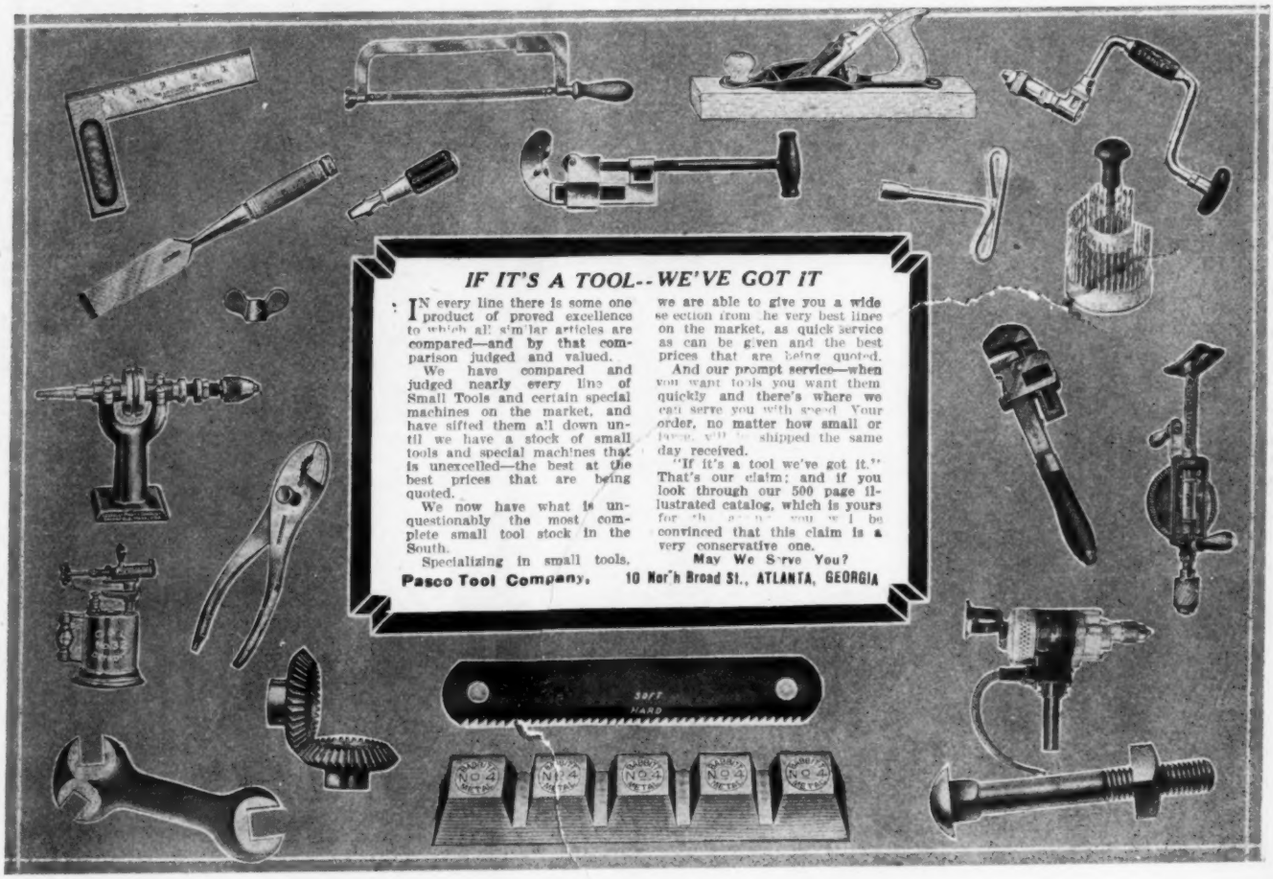
IF IT'S A TOOL--WE'VE GOT IT
IN every line there is some one product of proved excellence to which all similar articles are compared—and by that comparison judged and valued.
We have compared and judged nearly every line of Small Tools and certain special machines on the market, and have sifted them all down until we have a stock of small tools and special machines that is unexcelled—the best at the best prices that are being quoted.
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Specializing in small tools, we are able to give you a wide selection from the very best lines on the market, as quick service as can be given and the best prices that are being quoted.
And our prompt service—when you want tools you want them quickly and there's where we can serve you with speed. Your order, no matter how small or large, will be shipped the same day received.
"If it's a tool we've got it." That's our claim; and if you look through our 500 page illustrated catalog, which is yours for the asking, you will be convinced that this claim is a very conservative one.
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"A pump is only as serviceable as the valve you put into it"

"A man must be sure of his valve because no other part of a pump gets greater wear. And nothing will cause it to go 'dead' and become ineffective quicker than a defective valve. The fact that it works out of sight, too, makes it absolutely necessary to put in a pump valve that you know is reliable. That's why I'm using Jenkins Pump Valves in all my pumps. I know what they are."

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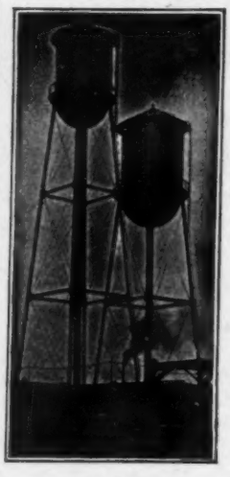

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Tell us what you want and let us quote prices.

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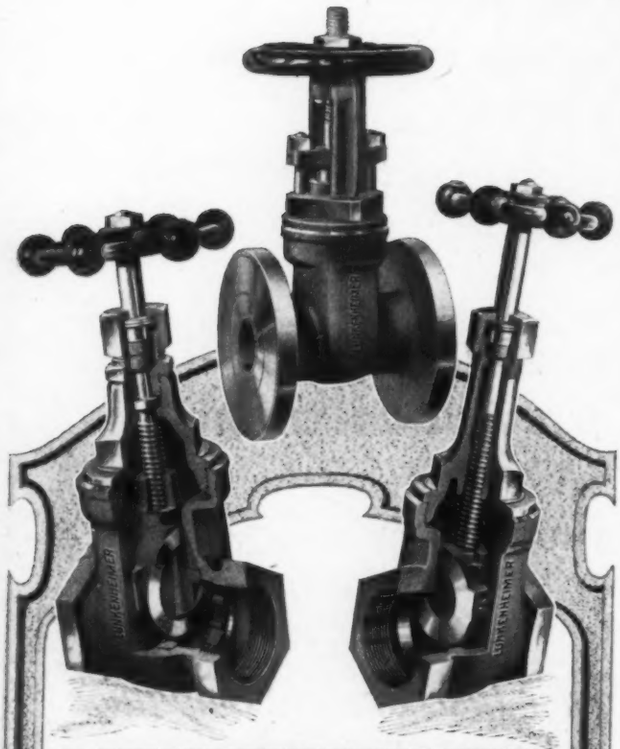

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have full straightway openings; are double seated, and will take pressure from either end.

Bodies are heavy to resist pipe strains and the valves seat tight without undue pull on the handwheel.

The DOUBLE DISC type has a ball and socket bearing between the discs, making them self-adjusting, and the discs are accurately guided by ribs in the body. Sizes ¼ to 3 inches, inside screw for working steam pressures up to 150 pounds.

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The material and workmanship are of that high order which characterizes all Lunkenheimer Products.

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LOCK OUT LAMP TROUBLES WITH A FLEXCO-LOK GUARD

Stop the unnecessary waste of electric light bulbs through breakage and loss by theft.

Flexco-Lok Lamp Guards

are easy to adjust and can be removed only by use of the key provided free with every dozen guards.

They are made of light, expanded steel, well coated with tin. No wires to spring or bend—the halves swing outward from a strong hinge at the base.

Flexco-Lok Guards safeguard your employees and work in progress from the danger of broken glass; they reduce fire hazard to a minimum, and they cost less than a single broken or stolen lamp.

A Convenient Portable Light

The Flexco Split Handle is quickly fastened to a Flexco guard, coupling with it as a unit. It makes a convenient and safe Portable for carrying light to inaccessible places. The lamp cord runs thru the split handle—requires no re-wiring of the socket to which the guard is quickly attached.

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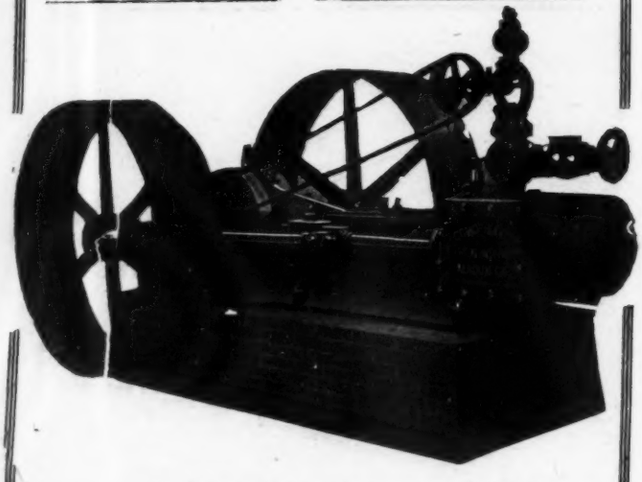

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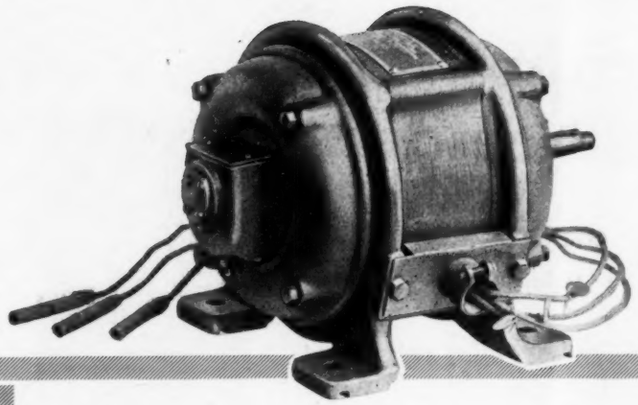
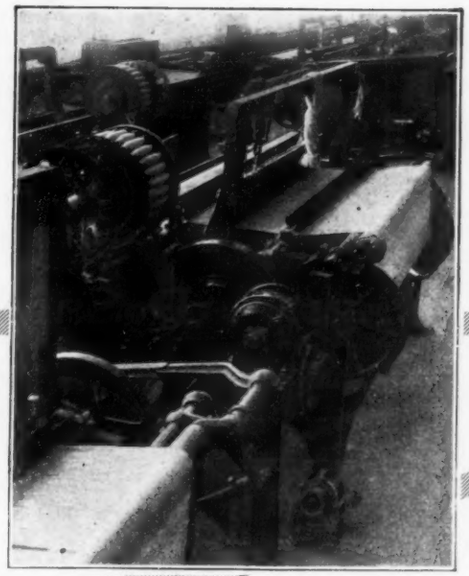
MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.





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**Totally Enclosed—Waste Packed Bearings—
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High Efficiency.**

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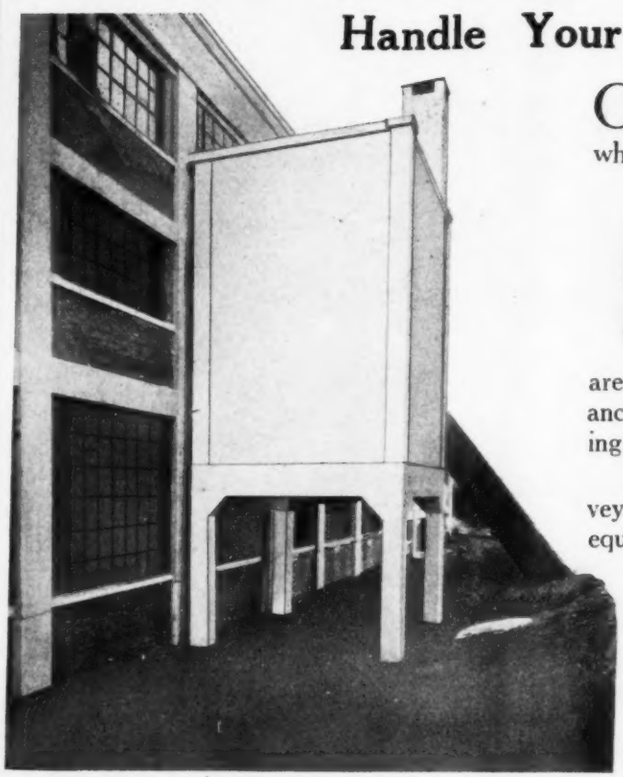

Note the ash tank into which the American Steam Ash Conveyor discharges the ashes in this power plant.

ONE operation handles the ashes from the boiler room to the ash tank outside. No need for ash wheelers to be continually getting in the firemen's way.

AMERICAN STEAM CONVEYORS

are labor saving. The first cost is low; the maintenance negligible. A few cents a ton is the only operating cost.

We are pioneers—leaders in the steam jet conveyor field. Ask for catalogue K describing our equipment.

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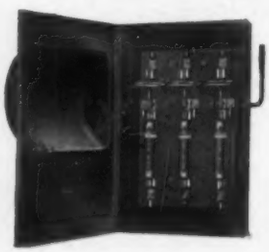
Increase Production By Eliminating Accidents

Reduction of accidents, cover compensation costs and decreased fire hazards are all *accomplished* by using

Square D Safety Switches

An insulated steel box completely encloses all live parts and prevents shock or burn. Switch can be locked in "open" position to prevent careless closing when repairs are being made on equipment it controls. Can be operated by anyone with *absolute safety*.



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Renewed Tungsten Lamps

Ten to Forty Watt
20c Each

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NATIONAL LAMP WORKS OF GENERAL ELECTRIC CO.
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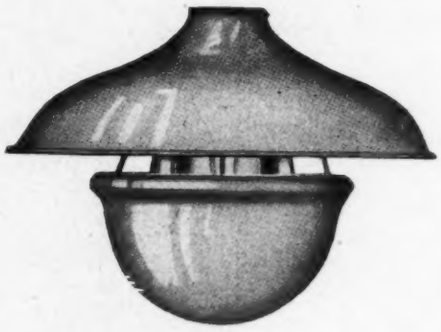

The
"Daylite"
Diffuser-Reflector

Maximum Illumination Without Glare

Most translucent bowls used in semi-indirect lighting are too thick and absorb an enormous percentage of the light.

The Eye Shield Diffuser used in the "DAY-LITE" Diffuser-Reflector is very thin and highly translucent, and it, together with the Reflector really produces about 25 to 33⅓% increased light—light that is scientifically correct, no glare, no contrasting shadows, but merely a wide distribution of soft bright light that produces a daylight effect.

Can be attached to any fixture and used with any Tungsten or type "C" lamp up to 200 watt.

Write today for catalog.

Luminous Specialty Company

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ECONOMY Renewable Fuses

are the *right* fuses to protect *your* electrical circuits

—because they afford the right sort of protection; their reputation lends assurance that you can safely depend on them for accuracy of rating and all-around efficiency in operation.

—because they cut annual fuse maintenance costs 80% as compared with the use of one-time fuses, owing to the fact that an inexpensive "Drop Out" Renewal Link restores a blown Economy Fuse to its original efficiency.

—because it's the work of a moment to replace the link and renew the fuse.

—because a good sized stock of "Drop Out" Renewal Links always on hand represents but a small outlay.

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Kinzie & Orleans Sts., **CHICAGO, U. S. A.**

Sole Manufacturers of "ARKLESS"—the Non-Renewable Fuse with the 100 per cent Guaranteed Indicator.

ECONOMY FUSES ARE ALSO MADE IN CANADA AT MONTREAL

SNOW REFILLED FUSES

Save Your Burnt-Out Fuse Cases

They are valuable to you because it's an expensive proposition to be buying new fuses and it's also an expensive proposition to spend five or ten minutes refilling fuses every time one blows. Such time loss may not look big individually, but consider what the collective loss is at the end of the year.

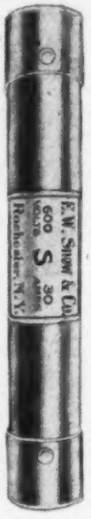
You want fuses that are always ready, that can be put in instantly.

Therefore, why not send us your old burnt-out fuse cases and we will refill them at so small a cost it will surprise you—and these refilled fuses are guaranteed to equal the new Class A fuse in every respect.

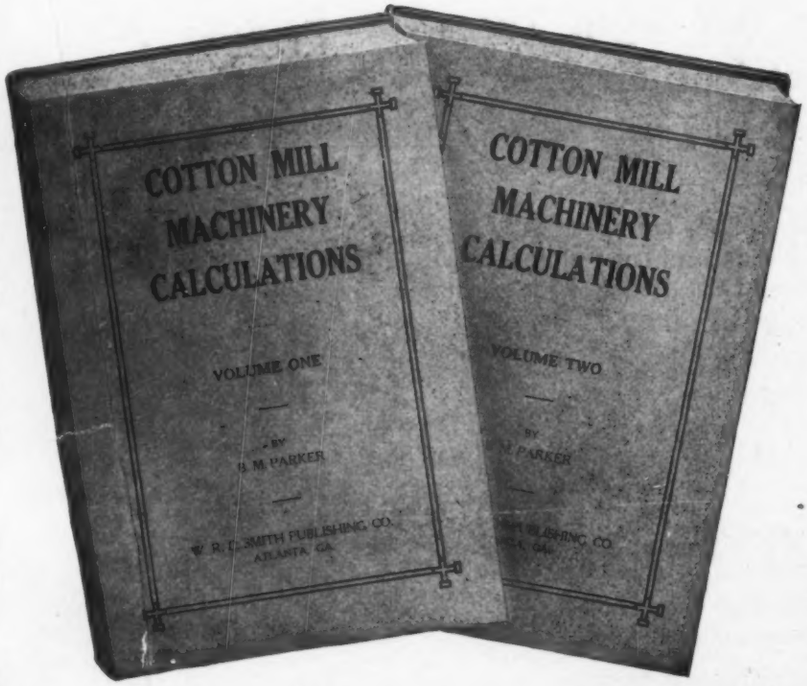
You save money, you save time, you save labor—so save your old burnt-out fuses and send them to us.

Booklet sent gladly on request.

E. W. Snow & Co., Rochester, N. Y.



"COTTON MILL MACHINERY CALCULATIONS"



EVERY Textile Man should have these reference books. They cover in a detailed and thorough manner all calculations necessary to be made on any cotton mill machinery manufactured in the United States and constitue one of the best references on this subject obtainable.

The two volumes are illustrated with 45 diagrams and contain 21 reference tables.

As the value of a book lies in its contents and not in a fancy cover, we have put these two volumes out in a strong, serviceable paper binding. You can secure them in conjunction with a subscription to COTTON.

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Selling Direct to Consumer.
NEW ACCOUNTS SOLICITED.

These Trademarks Are Guarantees of Supreme Quality Yarn

WHEN buying yarns—look for the trademark—the pride mark, of these famous spinning mills. They are your assurance of quality in every instance.

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—to give prompt attention to all inquiries.
—to see that the goods go forward at the time promised.

Combed Peelers, 30s to 80s, single and ply. Regular and reverse twist.
Combed Sea Island, gassed and ungassed, 30s to 80s, single and ply, reverse twist.
Carded Peelers, 40s, 50s and 60s.
Double Carded Peelers, 30s to 60s.

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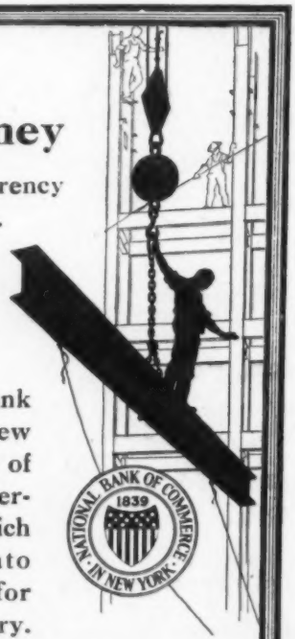

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ALL NUMBERS COTTON MERINO **YARNS** ALL COLORS WOOL WORSTED

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Salesmen calling on the textile mills, and interested in new lines of machinery, paints, building supplies or chemicals, either as a side line or exclusively will find it profitable to write, giving experience, territory covered and other details. Correspondence strictly confidential. Cotton, 1021 Grant Building, Atlanta, Ga.

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Accident Cabinets.
Thomas Co., F. H.

Acctylene Welding Apparatus.
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Commercial Acetylene Supply Co.

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New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B. F.

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Alkalies.
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Lovingood Co.
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Seeger Machine Tool Co
Smith & Furbush Mfg. Co.

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Seydel Mfg. Co.

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Seydel Mfg. Co.

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Acme Steel Goods Co.
Lovingood Co.
Signode System, Inc.

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New Departure Mfg. Co
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.

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Link-Belt Company.
Morse Chain Co.
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Belt Lacing.
Flexible Steel Lacing Co.

Belt Lacing.
Flexible Steel Lacing Co
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Link-Belt Company.
Williams & Sons, I. B.

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Dicks-David Co., Inc.
Born, Scrymser Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Electric Smelting & Alum. Co.
Grasselli Chemical Co
Hemingway, Inc., Frank
Kali Mfg. Co.
Kilpstein & Co., A.
National Aniline & Chemical Co.
Newport Chemical Works, Inc.
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General Electric Co.
Howard & Morse.
New York Blower Co.
Phila. Drying Machinery Co.
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Westinghouse Elec. & Mfg. Co.

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Paramount Hosiery Form Drying Co.
Pearson, Jos. T.

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Draper Corporation.
Greenville Spool & Mfg Co.
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Shambow Shuttle Co.
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Lombard Iron Works & Supply Co
Schofield's Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Boiler Feed Water Purification.
Permutit Co.
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Lunkenheimer Co.

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Acme Steel Goods Co.
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Lovingood Co.
Signode System, Inc.

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Lane & Bro.
Leatherd Sales Co.
Rogers Fibre Co.
Standard Fibre Co.

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Beer, H. & B.

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Felton Brush Co., D. D.
Felton, S. A. & Son Co.

Brushes—Commutator.
Dixon Crucible Co., Jos.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

Buckets & Pails—Mill.
Keystone Fibre Co.
Leatheroid Sales Co.
Rogers Fibre Co.
Standard Fibre Co.

Buckets—Elevator and Grab.
Link-Belt Company.

Buckles—Cotton Tie.
(See Box Strapping and Ties).

Building Contractors.
(See Architects & Engineers.)

Buildings—Portable.
Aladdin Co.
Lockwood, Greene & Co.

Building Material.
Aladdin Co.
Anchor Post Iron Works.
Belmont Iron Works.
Carpenter Co., Geo. B.
Barrett Co., The
Detroit Graphite Co.
Dufur & Co.
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Nashville Hardwood Flooring Co.
Page Steel & Wire Co.
Peaslee-Gaulbert Co., Inc.
Tuxbury Lumber Co., A. C.

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Aladdin Co.
Tuxbury Lumber Co., A. C.

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Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

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Southern Spindle & Flyer Co.

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Calender Rolls.
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Leatheroid Sales Co.
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Sargents Sons & Co., C. G.
Textile Finishing Machinery Co., The

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Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

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Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Card Feeds.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Whitin Machine Co.

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Whitin Machine Works.

Carpet Machinery.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Wks.
Phila. Textile Machy. Co.
Phila. Textile Machy. Co.
Schofield, Wm. Co.
Smith & Furbush Mch. Co.
Textile Finishing Mchy. Co., The

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Detroit Graphite Co.
Dixon Crucible Co., Jos.
Peaslee-Gaulbert Co., Inc.
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(See Belting—Chain Link.)

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Sizes and styles to
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A Refined Hotel for Your Mother, Wife and Sister
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Rates:—From $2 Per Day

A SPECIALTY
155 PLEASANT ROOMS
With Private Bath
$3 Per Day

The Martinique Restaurants Are Well Known for Good Food and Reasonable Prices.

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Allis-Chalmers Mfg. Co.
Seeger Machine Tool Co.

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Tagliabue Mfg. Co., C. J.
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Fawcett, Hughes.
Southern Cotton Yarn Co.
Weimar Bros.
Woodward Baldwin & Co.

Cotton Dealers and Brokers.
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Crompton & Knowles Loom Wks.
Delahunty Dyeing Machine Co.
Draper Corporation.
Firsching, J. A.
Fletcher Works.
Greenville Spool & Mfg. Co.
Howard & Bullough.
Phila. Drying Mchy. Co.
Phila. Textile Machy. Co.
Sargent's Sons, Corp., C. G.
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Schaum & Uhlinger.
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Stafford Co.
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Dictaphone Co.

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Cocker Mch. & Foundry Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Permutit Co.
Phila. Drying Machinery Co.
Phila. Textile Machy. Co.
Refinite Co.
Reliance Machine Works.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The
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Phila. Drying Machinery Co.

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Atlantic Dyestuff Co.
Barrett Co.
Borne Scrymser Co
Bosson & Lane.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Grasselli Chemical Co.
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Rossler & Hasslacher Chemical Co.
Seydel Mfg. Co.
Sherwin-Williams Co.
Sonneborn Sons, Inc., L.
Wolf & Co., Jacques
Zavon, Inc.

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(See Motors and Generators.)

Electric Fans.
(See Fans—Electric.)

Electric Lamps.
(See Lamps.)

Electric Lamp Guards.
Flexible Steel Lacing Co.

Electric Signs.
Federal Sign System.

Electric Sirens.
Federal Sign System.

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Carter Electric Co.
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Federal Sign System.
Imperial Electric Co.
Luminous Specialty Co.
General Electric Co.
Seeger Machine Tool Co.
Snow & Co., E. W.
Walsh & Weidner Boiler Co.
Westinghouse Electric & Mfg. Co. Co.

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Carpenter Co., Geo. B.
Seeger Machine Tool Co.

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Allis-Chalmers Mfg. Co.
Carpenter Co., Geo. B.
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Schofield's Sons Co., J. S.
Seeger Machine Tool Co.
Toomey, Frank
Walsh & Weidner Boiler Co.

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Carpenter Co., Geo. B.
Jenkins Bros.
Lunkenheimer Co.

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Carpenter Co., Geo. B.
Goodyear Tire & Rubber Co.
Jenkins Bros.
Lunkenheimer Co.
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Smith & Furbush Mch. Co.

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Anchor Post Iron Works.
Belmont Iron Works.
Cyclone Fence Co.
Page Steel & Wire Co.

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Keystone Fibre Co.
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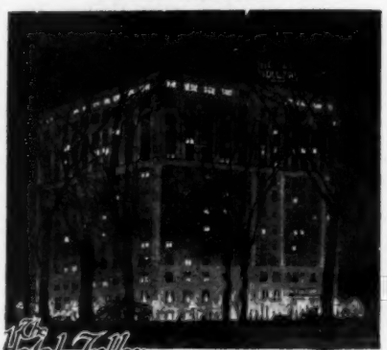

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Filters—Water.
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Finishing.
(See Dyers, Bleachers and Finishers.)

Finishing and Sizing Materials.
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Borne, Schrymser Co.
Bosson & Lane.
Corn Products Refining Co.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Hemingway, Inc., Frank
Kilpstein & Co., A.
Newport Chemical Works, Inc.
Metz & Co., H. A.
National Aniline & Chemical Co.
Roessler & Hasslacher Co.
Co.
Seydel Mfg. Co.
Sherwin-Williams Co.
Sonneborn Sons, Inc., L.
Warren Soap Mfg. Co.
Wolf & Co., Jacques
Zavon, Inc.

Fire Escapes (Spiral).
Collins, J. D.

Fire Hose.
(See Paint—Fireproof.)

Fire Protecting Paint.
(See Hose—Fire.)

First Aid Room Equipment.
(See Hospital Equipment.)

Flooring (Hardwood).
Nashville Hardwood Flooring Co.

Floor Scrubbing Machine.
American Scrubbing Machine Co.

Fluted Rolls.
Howard & Bullough.
Saco-Lowell Shops.
Schofield's Sons Co., J. S.
Smith & Furbush Machine Co.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Flyers.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Fountains (Drinking).
Manufacturers Equip. & Eng. Co.
Puro Sanitary Drinking Fountain Co.

Friction Clutches.
(See Clutches—Friction.)

Fuses.
(See Elec. Mchy. and Supplies.)

Garnett Machines.
Roy Son Co., B. S.
Smith & Furbush Mach. Co.

Gas Engines.
(See Engines—Gas.)

Gaskets.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Gauge Cocks.
Lunkenheimer Co.

Gauges—Draft.
Taylor Instrument Co.

Gauges—Mercury Column Vacuum.
Taylor Instrument Co.

Gauges—Oil.
Lunkenheimer Co.

Gauges—Water.
Lunkenheimer Co.

Gears—Silent.
General Electric Co.
Link-Belt Company.
Morse Chain Co.

Gear Cutters.
Cresson-Morris Co.
Whitin Mch. Co., D. E.

Gear Pullers.
Greb Co., Inc.

Generators—Electric.
(See Motors and Generators.)

Generators—Electric.
(See Motors and Generators.)

Ginning Information.
Ginners' Association.

Graphite—Products.
Dixon Crucible Co., Jos.

Grates—Shaking.
Lombard Fdy. & Mch. Co.

Grease.
(See Lubricators.)

Grease Cups.
(See Lubricators.)

Grinders—Card, Cylinder Roll, Napper and Garnett.
(See Card Grinding Machinery.)

Guards (Elec. Lamp.)
Flexible Steel Lacing Co.

Guides (Thread).
Mitchell-Bissell Co.
Palmer Co., I. E.

Gums.
(See Finishing and Sizing Materials.)

Hangers.
(See Shafting and Hangers.)

Hardwood.
Nashville Hardwood Flooring Co.

Harness—Loom.
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Garland Mfg. Co.
Electro Bleaching Gas Co.

Heaters (Water).
Manufacturers Equip. & Eng. Co.

Heating and Ventilating Apparatus.
(See Ventilating Apparatus.)

Heddles.
Crompton & Knowles Loom Wks.
Draper Corporation.
Steel Heddle Mfg. Co.

Heddle Frames.
Crompton & Knowles Loom Wks.
Steel Heddle Mfg. Co.

Hoists.
Link-Belt Company.
Morse Chain Co.
Pasco Tool Co.
Seeger Machine Tool Co.

Hose—Fire.
Collins, J. D.
Goodyear Tire & Rubber Co.

Hosiery Finishing Boards.
(See Boards.)

Hosiery Forms.
(See Drying Forms.)

Hosiery Yarns.
(See Yarn Manufacturers.)

Hospital Equipment.
Thomas Co., F. H.

Hotels.
DeSoto.
Marquette.
Martinique.
Sinton.
Tuller.

Houses (Ready-Made).
Aladdin Co., The
Tuxbury Lumber Co., A. C.

Humidifying Apparatus.
Carrier Eng. Corp.
New York Blower Co.
Parks-Cramer Co.
Sturtevant Co., B. F.

Hydraulic Turbines.
(See Turbines—Steam.)

Hydro Extractors.
(See Extractors.)

Hydrometers.
Taylor Instrument Co.

Hygrometers.
Taylor Instrument Co.

Hygrodeiks.
Taylor Instrument Co.

Indicating and Recording Instruments.
Taylor Instrument Co.
Tagliabue Mfg. Co., C. J.

Indigo.
(See Dyestuffs and Chemicals.)

Injectors.
Lunkenheimer Co.

Ink—Stencil and Marking.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
National Marking Machine Co.

Iron Work—Ornamental.
Anchor Post Iron Works.
Belmont Iron Works.
Cyclone Fence Co.
Dow Wire & Iron Works.
Dufur & Co.
Howard & Morse.
Lombard Iron Works & Supply Co.
Page Steel & Wire Co.

Jacks.
Adams Co., Geo. H.

Jacquards.
Crompton & Knowles Loom Wks.

Jute Bagging Machines.
Smith & Furbush Mach. Co.

Kettles—Size.
(See Size Kettles.)

Kettles—Soda.
Lombard Iron Works & Sup. Co.
Manufacturers Equip. & Eng. Co.

Kiers.
(See Bleaching Kiers.)

Knit Goods.
(See Cotton Cloth Commission Merchants and Dealers.)

Knit Goods Washers.
(See Washers—Cloth.)

Knitting Machinery and Supplies.
Adams Co., Geo. H.
Boss Knitting Mach. Works.
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Nye & Tredick Co.
Scott & Williams.
Smith & Furbush Mach. Co.
Wildman Mfg. Co.

Lamps—Incandescent and Arc.
Boston Economy Lamp Div.
Carter Electric Co.
General Electric Co.
Westinghouse Lamp Co.

Lamp Guards (Key Locking).
Flexible Steel Lacing Co.

Lamp Reflectors.
Carter Elec. Co.
Ivanhoe-Regent Works.
Luminous Specialty Co.

Landscape Architects.
(See Village Architects.)

Lappers.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Laundry Machinery.
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Wks.

Lavatories.
Mott Southern Co.

Leather Belting.
(See Belting.)

Leather Specialties.
American Supply Co.
Graton & Knight Mfg. Co.
Ladew & Co., Inc., Edw. R.
Williams & Sons, I. B.

Linen Yarns.
(See Yarns—Linen.)

Link Belting.
(See Belting—Link.)

Liquid Chlorine.
(See Chlorine.)

Loaders—Wagon and Trucks.
Link-Belt Company.

Lockers (Metal).
Collins, J. D.
Manufacturers Equip. & Eng. Co.

Logwood Extract.
(See Dyestuffs and Chemicals.)

Looms.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield, Wm. & Co.
Stafford Co., The
Whitin Machine Works.

Loom Attachments (Auto).
Draper Corp.

Lubricants.
Dixon, Jos., Crucible Co.
Kellogg & Co., E. H.
N. Y. & N. J. Lubricant Co.
Swan & Finch Co.

Lubricators.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.

Lug Straps.
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Lumber.
Nashville Hardwood Flooring Co.

Marking Pots, Stencils, Inks, Etc.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Lovingood Co.
National Marking Machine Co.

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National Marking Machine Co.

Mercerized Yarns.
(See Yarns Mercerized.)

Mercerizing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Metal Ceilings, Etc.
Belmont Iron Works.
Lupton's Sons Co., David

Metals (Perforated).
(See Screens and Sieves.)

Metal Workers—Sheet.
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Lombard Iron Works & Supply Co.
Howard & Morse.
Page Steel & Wire Co.

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Westinghouse Elec. & Mfg. Co.

Meters (Revolution)
Taylor Instrument Co.

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(See Boxes—Mill.)

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(See Architects and Engineers.)

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(See Villages.)

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(See Paint—Mill White.)

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Allis-Chalmers Mfg. Co.
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General Electric Co.
Imperial Electric Co.
Seeger Machine Tool Co.
Westinghouse Elec. & Mfg. Co.

Mule Stands.
Transmission Ball Bearing Co.

Nails—Cement Coated.
Lovingood Co.

Nappers.
Roy & Son Co., B. S.

Needles—Latch.
Adams Co., Geo. H.

Oils—Finishing
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Oils—Lubricating.
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Oil Cups.
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Oil Paper.
Bradley Mfg. Co., A. J.

Oiling Devices.
(See Lubricators.)

Openers for Cotton, Wool, Waste Etc.
Saco-Lowell Shops.
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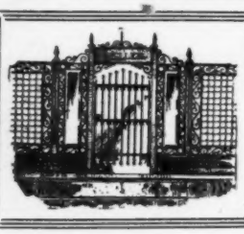

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Graton & Knight Mfg. Co.
Jenkins Bros.

Paint.
Atlanta Gas Light Co.
Barrett Co., The
Chaffee, Thos. K.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Peaslee-Gaulbert Co., Inc.
Sherwin-Williams Co.
Wadsworth, Howard & Co.

Paint—Preservative and Fireproof.
Atlanta Gas Light Co.
Barrett Co.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Sherwin-Williams Co.
Peaslee-Gaulbert Co., Inc.
Wadsworth, Howland & Co.

Paint—Mill White.
Chaffee, Thos. K.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Peaslee-Gaulbert Co., Inc.
Sherwin-Williams Co.
Wadsworth, Howland & Co.

Paper—Oil.
Bradley Mfg. Co., A. J.

Perforated Metal.
(See Screens and Sieves.)

Peroxides.
Rossler & Hasslacher Chemical Co.

Phonographs (Dictating).
Dictaphone Co.

Pickers—Curled Hair.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.

Pickers—Leather.
Garland Mfg. Co.

Picker Sticks.
Garland Mfg. Co

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.
Whitin Machine Works.

Pipe Fittings.
Lunkenheimer Co.

Pipe Threading & Cutting Machines.
Seeger Machine Tool Co.

Playground Equipment.
American Playground Device Co.
Dow Wire & Iron Works.
Hill-Standard Co.

Power Transmission.
Allis-Chalmers Mfg. Co.
American Pulley Co.
Carpenter Co., Geo. B.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
General Electric Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Hyatt Roller Bearing Co.
Kelly Co., Henry C.
Ladew & Co., Inc., Edw. R.
Link-Belt Company.
Morse Chain Co.
New Departure Mfg. Co.
Seeger Machine Tool Co.
Stanley Belting Corp.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.

Presses.
American Laundry Machnry. Co.
Bridge & Co., Ltd., David
Butterworth & Sons Co., H. W.
Economy Baler Co.
Lovingood Co.
Phila. Drying Machine Co.
Reliance Machine Works.
Seeger Machine Tool Co.
Smith & Furbush Mch. Co.
Textile Finishing Machinery Co., The

Pulleys.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Company.
Seeger Machine Tool Co.
Transmission Ball Bearing Co.

Pulley Covering.
Goodyear Tire & Rubber Co.
Stanley Belting Corp.
Williams & Sons, I. B.

Pumps.
Allis-Chalmers Mfg. Co.
Seeger Machine Tool Co.
Textile Finishing Machinery Co.
Walsh & Weidner Boiler Co., The
Toomey, Frank
Westinghouse Elec. & Mfg. Co.

Pump Valves.
(See Valve Discs.)

Psychrometers (Sling).
Taylor Instrument Co.

Pyrometers.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Quill Cleaning Machines.
Terrell Mch. Co.

Railings.
Dufur & Co.

Recording Instruments.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Reeds.
American Supply Co.
Emmons Loom Harness Co.

Reels.
Crompton & Kowles Loom Wks.
Draper Corporation.
Saco-Lowell Shops.
Schofield, Wm. Co.
Whitin Machine Works.

Reflectors (Lamp).
Ivanhoe-Regent Works.
Luminous Specialty Co.

Regulators—Pressure.
Tagliabue Mfg. Co., C. J.
Taylor Instrument Co.

Regulators—Temperature.
(See Temperature Controllers.)

Repairing—Textile of all kinds.
General Machine Works.
Southern Spindle & Flyer Co.

Rib Top Cutters.
General Machine Works.
Wildman Mfg. Co.

Ring Travelers—Steel and Bronze.
Whitinsville Spining Ring Co.
Whitin Machine Works.

Rings—Spinning.
(See Spinning Rings.)

Rocker Shaft Bearings.
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Rolls (Calender.)
Roy & Son Co., B. S.

Rolls—Steel.
Southern Spindle & Flyer Co.

Roofing.
Atlanta Gas Light Co.
Barrett Co., The
Belmont Iron Works.
Cortright Metal Roofing Co.
Detroit Graphite Co.
Peaslee-Gaulbert Co., Inc.
Wadsworth, Howland & Co.

Roofing Felt and Pitch.
Atlanta Gas Light Co.

Roof and Cement Coating.
Atlanta Gas Light Co.
Barrett Co.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Peaslee-Gaulbert Co., Inc.
Sherwin-Williams Co.
Wadsworth, Howland & Co.

Rope—Transmission.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Hunt Co., C. W., Inc.
Kelly Co., Henry C.
Link-Belt Company.

Roving Cans and Trucks.
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Roving Machinery.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Rubber Stamps.
(See Stamps, Stencils, Etc.)

Rubber Goods.
Goodyear Tire & Rubber Co.

Sanitary Closet Cans.
Sanitary Eng. Co.
Selig Co.

Sanitary Products.
Cement Products Co.
Kaustine Co.
Mott-Southern Co.
Rundle-Spence Mfg. Co.
Sanitary Eng. Co.
Selig Co.
Vogel Co., Jos. A.

Sash-Window—Steel.
Lupton's Sons Co., David

Scales.
American Kron Scale Co.
Lovingood Co.
Standard Scale & Supply Co.

Scale Preventer (Boiler).
(See Boiler Feed Water Purification.)

Screens & Sieves—Perforated.
Beckley Perforating Co.
Erdle Perforating Co.
Link-Belt Company.

Scrubbing Machine—Floor.
American Scrubbing Mch. Co.

Sewing Machines.
Merrow Machine Co., The
Textile Finishing Mchy. Co.
Wilcox & Gibbs Sewing Mach. Co.

Shades (Electric Lamp).
(See Reflectors).

Shafting & Hangers.
Cresson-Morris Co.
Dodge Sales & Eng. Co.
Link-Belt Co.
Seeger Machine Tool Co.
Transmission Ball Bearing Co.

Shears.
Roy & Son Co., B. S.

Shelving—Sectional Steel.
Collins, J. D.
Lupton's Sons Co., David
Manuafcturers' Equipment & Eng. Co.

Shingles—Asphalt.
Barrett Co.

Shingles—Metal.
Cortright Metal Roofing Co.

Shower Baths.
Mott-Southern Co.

Shuttles.
Brown Co., David
Crompton & Knowles Loom Wks.
Draper Corporation.
Shambow Shuttle Co.

Signs (Electric).
Federal Sign System.

Sinkers.
Adams Co., Geo. H.

Singeing Machinery.
Butterworth & Sons Co., H. W.
Phila. Drying Machine Co.
Textile Finishing Machinery Co., The

Size Box Temperature Controller.
Tagliabue Mfg. Co., C. J.

Size Kettles.
Butterworth, H. W. & Sons Co.
Howard & Bullough, American Machine Co.
Lombard Iron Works & Sup. Co.
Manufacturers' Equip. & Eng. Co.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The

Sizing and Finishing Compounds.
(See Finishing & Sizing Materials.)

Skewers.
Brown Co., David
Greeneville Spool & Mfg. Co.
Jordan Mfg. Co.

Skylights—Steel.
Belmont Iron Works.
Lupton's Sons. Co., David

Slashers and Slasher Room Supplies.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Howard & Bullough.
Lovingood Co.
Mossberg Co., Frank
Saco-Lowell Shops.
Textile Finishing Machinery Co., The

Slasher Tape.
(See Tape—Slasher.)

Slate Asphalt Roofing.
Barrett Co.

Slubbers.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

Soap—Textile.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Grasselli Chemical Co.
Kali Mfg. Co.
Hemingway & Co., Frank
Kilpstein & Co., A.
Newport Chemical Works.
Sonneborn Sons, Inc., L.
Warren Soap & Mfg. Co.
Wolf & Co., Jacques

Softeners—Cotton.
Arabol Mfg. Co.
Atlantic Dyestuff Co.
Borne, Schrymser Co.
Bosson & Lane.
Du Pont de Nemours & Co., E. I.
Grasselli Chemical Co.
Hemingway & Co., Frank
Kali Mfg. Co.
Klipstein & Co., A.
Newport Chemical Works.
Rossler & Hasslacher Chemical Co.
Seydel Mfg. Co.
Sonneborn Sons, Inc., L.
Wolf & Co., Jacques
Zavon, Inc.

Softeners—Water.
(See Water Softeners.)

Solderless Connectors (Frankel.)
Westinghouse Elec. & Mfg. Co.

Solvents.
(See Finishing.)

Spindles.
Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works.

Spindles—Ball Bearing.
Draper Corporation.
Howard & Bullough.
New Departure Mfg. Co.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
U. S. Ball Bearing Co.

Spinners.
Arlington Cotton Mills.
Arrow Mills, Inc.
Flint Mfg. Co.
Gray Mfg. Co.
Myrtle Mills, Inc.
Parkdale Mills, Inc.

Spinning Frames.
American Machine Co., H. & B.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Howard & Bullough.
Saco-Lowell Shops.
Schaum & Uhlinger.
Whitin Machine Works.

Spinning Rings.
Draper Corporation.
Howard & Bullough.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

Spinning Room Machinery and Supplies.
Dary Ring Traveler Co.
Greenville Spool & Mfg. Co.
Southern Novelty Co.
Universal Winding Co.
Whitin Machine Wks.
Whitinsville Spinning Ring Co.

Spinning Tape Specialists.
American Textile Banding Co. Inc.
Barber Mfg. Co.

Spinning & Twisting Travelers.
Dary Ring Traveler Co.

Spooling Machinery.
Draper Corporation.
Greenville Spool & Mfg. Co
Saco-Lowell Shops
Smith & Furbush Machine Co.
Whitin Machine Works.

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Brown Co., David
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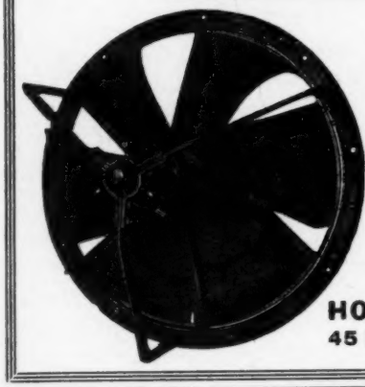

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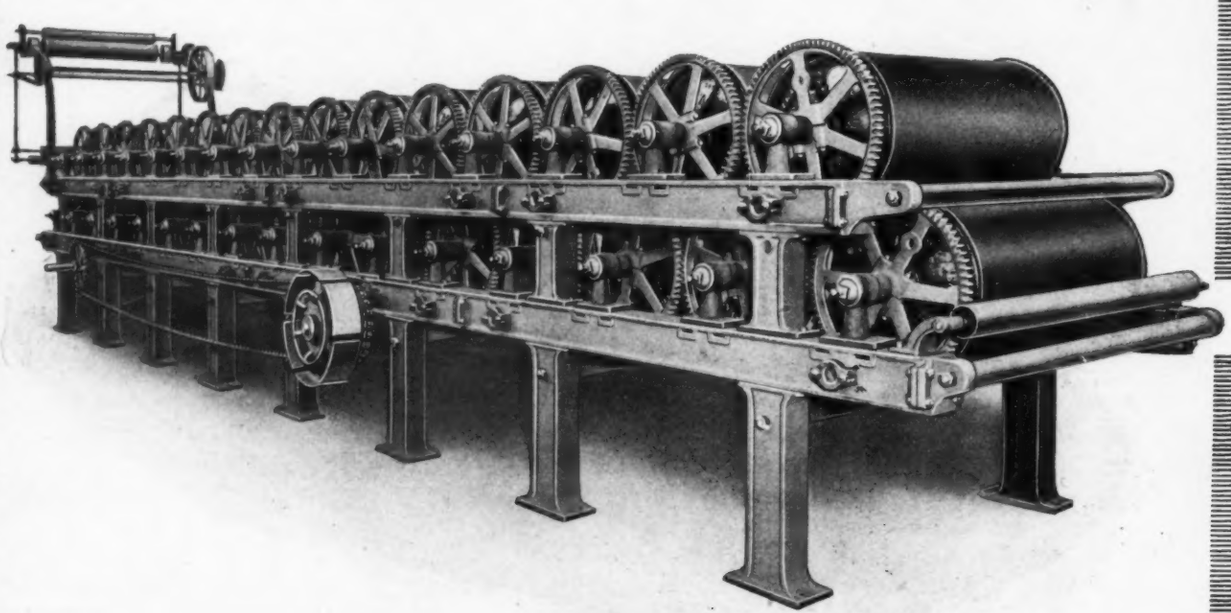

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The filament of these lamps is operated at a higher temperature than that of the MAZDA C lamps, thus producing more blue rays and decreasing the red and yellow rays.

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Tanned by us for belting use

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A Belt is a beast of burden that can spill a large part of its load without your eye perceiving it.

Here is a belt traveling at a speed of more than a mile a minute. It operates completely around the pulleys 70 times every 60 seconds. At more than a revolution per second, think how even little leaks would foot up a big total if this were not the proper belt for the work to be done.

All Graton & Knight Standardized Series Leather Belts give triple insurance against power leaks because, first, they are made of leather, the one belting material that has the right degree of elasticity to give and take up its tension, and the best of pulley-gripping qualities. Second, this leather is tanned in our own tannery, specifically for belting purposes. Third, our belts are graded into a Standardized Series which includes belts built specifically for every power transmission need. Each is standardized in its manufacture and standardized for its work.

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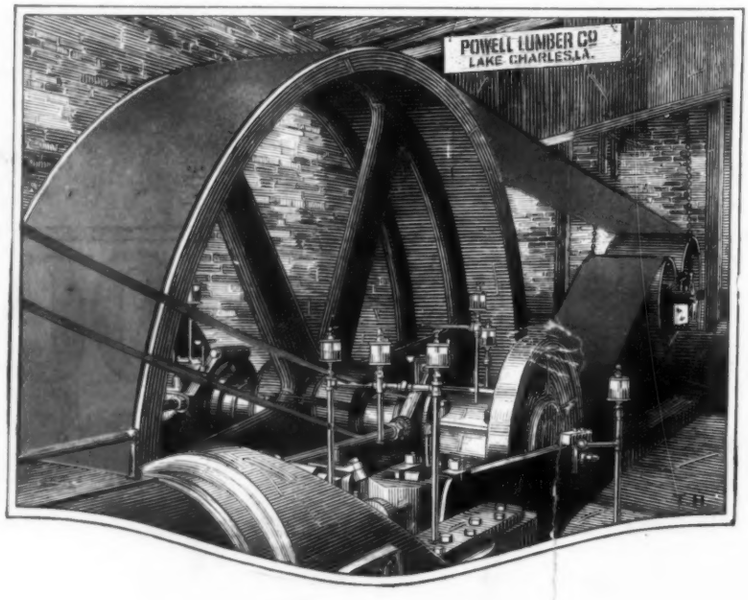
By means of standardized methods of grading and manufacture, together with extensive investigations in our Engineering Laboratory, our Engineers are able to specify the correct belt for a given drive. Tests show that a 14 to 16 ounce belt should be rated at not more than 90% of the capacity of a 16 to 18 ounce belt. Consult our Engineering Department.



Here is a 34" Gra-Knight 3-ply Belt 82½ feet long. It was installed in December, 1915, in the plant of The Powell Lumber Co., Lake Charles, La. 14 ft. Drive Pulley, 136 R. P. M. 52" Driven Pulley. Belt Speed 5900 F. P. M. 443 horse power. The cost per horse power per week to date is 1⅛ cents with several more years service to come.